

STUDIES IN THE PYRRHOPYGINÆ, WITH DE-
SCRIPTIONS OF SEVERAL NEW SPECIES
(LEPIDOPTERA, RHOPALOCERA,
HESPERIIDÆ)

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The two genera treated in this first paper comprise a considerable number of large and beautiful *Hesperiidæ*, among which there are groups of species bearing a very close superficial resemblance to each other and having very little in the way of maculation that will serve as constant characters for their separation. Despite the close superficial appearance the details in the form of the male genitalia differ materially and in many cases it is only through an examination of these parts that a satisfactory identification may be made. It is unfortunate that the description of some of the species is so very brief, omitting many important details, and those mentioned applying as well to other species as the one described. This has been the cause of much misidentification and confusion.

The writer, having found it quite impossible to identify accurately the material in his collection, from any of the published papers dealing with these insects, has spent many months in comparing all of this material with the original descriptions, and the figures when given by the authors, and in the study of the male genitalia where specimens were available for dissection. As the result of these studies, it has been found, in some instances, that the insect to which a certain name is usually applied does not agree with the type. This is pointed out and corrected in subsequent pages of this paper. It has also resulted in the discovery of several apparently undescribed species.

It is, of course, quite possible that the writer may make some misidentifications, owing to the difficulty, if not impossibility, of determining from the insufficient descriptions just what was before the authors when they wrote them. In any event the accompanying figures of the male genitalia will provide a certain

means of identification of the species treated in this paper under a given name, and if it is possible at some time to examine the type of the various species that have been described, if it can be found, and the form of the genitalia differs from that figured here, then the proper correction may be made. In the meantime there will be some certainty as to which insect a given name applies. It has been impossible to obtain material in a number of species and therefore no examination of these could be made.

In addition to the omission of many characters in the descriptions, confusion occurs as to the meaning of an author when referring to the anterior part of the insect's thorax, it being evident that the terms "collar" and "shoulder covers" and other terms used by various authors do not always apply to the same thing; therefore in this paper Plate XXXIV, Fig. A, is given in explanation of the parts referred to. The use here of the term "pectus red" refers to what is often stated as "red-spotted anterior coxæ."

While as a whole the superficial characters are reasonably constant, there must be expected a certain amount of individual variation in such things as the extent of the darkening of the fringes in the apical area of the primaries, the width of the basal or marginal spots or bands of either wing, in some species the presence or absence of a spot on each side of the shoulder covers, and in one species at least (*scylla* Menetries) in the color and extent of the coloring of the tegulæ.

A considerable number of slides have been made of the male genitalia, and where the material afforded it several of a species were made, but in some species only a single example was available, so it is uncertain just how much individual variation may occur in these species. The form has been found to be quite constant in those species where a number of individuals were examined, the variations in detail being no more than one would expect to find. The result has been to separate a number of species which differ but little in superficial appearance though having a distinct form of the genitalia and there seems to be no recourse but to describe these as new together with those remaining after all of the present names in use have been applied in accordance with the characters given in the original description.

From the figures given in this paper it will be noted that there is a similarity of form in certain species, the superficial appearance of which seems to preclude the possibility of their being other than closely related. The characters found in the form of the genitalia are here used to divide the genus *Pyrrhopyge* into several well defined groups and this division seems to be borne out in the general external resemblance of the species thus brought together. It may some time be deemed sufficient evidence to warrant the separation of some of these groups into genera of their own, but for the present it seems best to leave the genus as it is and merely group the species according to the genitalic characters. Most of those species which were not available for examination have been left in the first group, that is group A, but they may not all belong there; when material in these species is available for examination they can readily be removed to some other group if necessary. Plate XXXIV, Fig. B, illustrates the parts referred to in the remarks on the genitalia.

The following list of species is based on the paper of Mabille and Boullet and that contained in Seitz, "Macrolepidoptera of the World," with the addition of those since described. The writer has briefly summarized the principal superficial characters of the species before him; where no material was available, the original description is cited. As the published records of distribution are apt to contain errors in determination, the one given in this paper is for the most part only the type locality mentioned in the original description and of the specimens at hand.

The records of distribution are followed by abbreviations in parenthesis, indicating the collection in which the specimens are located or the authority for the record; these are explained as follows: (A.S.) Academy of Natural Sciences, Phila., Pa.; (A.M.) American Museum of Natural History, N. Y. City; (B.M.) British Museum, London, England; (G. & S.) Godman and Salvin, Biol. Centrali-Americana; (B.) the collection of the author.

In the references to Hewitson's "Exotic Butterflies" it has been necessary to omit the data in regard to the text, as the

pages are unnumbered, but the text accompanying the figures cited will be found in close proximity to the plates.

In the descriptions of new species in this paper all measurements of expanse are from the center of the thorax to the apex of the primary $\times 2$.

Grateful acknowledgment is hereby made of the invaluable assistance rendered by my good friends, Capt. R. C. Williams, Jr., Mr. F. E. Watson, Capt. N. D. Riley and Dr. William Schaus, in the loan of specimens and slides of genitalia, help with references to the literature and expert advice, without which it would have been necessary to omit a great deal from this paper. Capt. Riley has been most kind in examining types in the British Museum collection and informing the writer of their exact characters, as well as in making an examination of the genitalia of one of them (*latifasciata* Butler) and in sending an excellent drawing of it in order to confirm the identification of that species. Figure A is also copied from a drawing made by Capt. Riley.

PYRRHOPYGE

Hubner, Verz. bek. Schmett., p. 102, 1816.

Some confusion has obtained in the fixation of the type of this genus, and the writer believes that it is better to follow the action of Scudder, (Historical Sketch, Proc. Amer. Acad. of Arts and Sciences, Boston, second series, vol. 2, pp. 261, 262, 1875); Watson, (Proc. Zool. Soc., London, p. 11, 1893); Godman & Salvin, (Biol. Centr.-Amer., Rhopal., vol. 2, p. 247, 1893, under *phidias* Linnaeus), in considering the type to be *hyperici* Hubner.

GROUP A. *P. hyperici* section (typical)

Genitalia. The species included in this group have the same form in the various parts as in *hyperici* Hubner, the termination of the claspers naturally varying in detail among the species. The apex of the uncus is rather broad, rounded and bifid. From the base of the uncus projects a flange on both sides, which varies in shape from triangular, or irregularly so, to a narrow rod-like projection which may be very long and up-curved towards the termination; these flanges are usually ser-

rate and more or less shagreened. The girdle is long. The sacculus is moderately long. The aedoeagus is somewhat bulbous at the base, a little bent, tapering to the apex before which there is usually a small lobe with a few serrations. The aedoeagus is firmly attached to the tip of the sacculus by very strong muscles (Fig. 8) and passed through the upper part of a cup-shaped process between the two sides of the girdle (Figs. 23, 25, 30).

1. Fringes white.

- a. With a white or bluish-white marginal area of the secondaries, above, below, or both.

P. hyperici (Plate XXXV, Fig. 1).

Hubner, Zutrage Samml. exot. Schmett, pp. 16-17; figs. 271-272; 1823.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 173, 179, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, pl. 162a, 1921.

Wings greenish-black. Secondaries above with an irregular, bluish-white marginal area; beneath with a bluish-white basal area extending to almost the outer margin. Head red in front and just back of the antennæ in the center. Palpi and anal tuft red. Collar, shoulder-covers, tegulæ and pectus blue-black. The fringes of the primaries in the one specimen at hand are nearly all black, showing but a few white scales between veins 1 and 3; of the secondaries white from the anal angle to nearly the outer angle.

Distribution. Type locality: Brazil.

Para, Brazil (B), (A.M.).

P. sergius (Plate XXXV, Fig. 2).

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 369, 1874.

Godman, Ann. & Mag. Nat. Hist., ser. 7, vol. xx, p. 155, 1907.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 173, 179, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, pl. 162 a, 1921.

The species to which the name *sergius* is applied in this paper, has black wings with a dark bluish sheen. The secondaries be-

neath have a marginal bluish-white band extending from the outer angle to the anal angle, broad at the former and ending in a point at the latter angle, it is crossed by the black veins and somewhat dentate on the inner edge. The inner edge of the band runs in practically a straight line. Head red in front, at the back red in the center bordered with black. Palpi and anal tuft red. Collar red and black mixed. Shoulder-covers, tegulae, and pectus black. Fringes white darkened at the apex of the primaries.

Erschoff's *leucoloma* has been placed by authors as a synonym of *sergius*, but Godman in the paper above referred to, states that the Plotz figure (drawing no. 1599) of *leucoloma* has the marginal bluish-white band of the underside of the secondaries extending further inward. There are before us individuals which show this difference in the shape of the band and each has a distinct form of the genitalia. The two insects have therefore been separated and identified on the basis of Godman's remarks.

Distribution. Type locality: Chanchamayo, Peru.

Chanchamayo, Peru; La Merced, Chanchamayo, Peru (B).

P. leucoloma (Plate XXXV, Fig. 3).

Erschoff, Russ. Ent. Obsheh, Trudy, vol. viii, p. 146, pl. 3, fig. 2, 1874-1876.

Plotz, Stett. Ent. Zeit., vol. xl, p. 532, 1879.

Godman, Ann. & Mag. of Nat. Hist., ser. 7, vol. xx, p. 155, 1907.

The insect identified as *leucoloma* has black wings with a dark bluish sheen as in *sergius*. The secondaries beneath have a bluish-white marginal band extending from the costal vein at the outer angle, where in the last interspace it is composed of scattered scales, to the anal angle, where it is extended to the inner margin in scattered scales; it is crossed by the black veins and is somewhat dentate on the inner edge, which does not run in a straight line as in *sergius* but is noticeably broader in the center than at either end. Head red in front, in back red in the center bordered with black. Palpi and anal tuft red. Collar red in the center, black at the extreme sides. Shoulder covers, tegulae

and pectus black. Fringes white, darkened at the apex of the primaries. As noted under *sergius* this species is separated by the differently shaped marginal band of the underside of the secondaries as noted by Godman.

Distribution. Type locality: "In the neighborhood of Monterico, Peru."

Peru (B).

P. araethyrea (Plate XXXV, Fig. 4).

Hewitson, Equat. Lep., p. 70, 1870.

Hewitson, Exot. Butt., vol. iv, Pyrrh. pl. iii, fig. 18, 1871.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 173, 179, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, pl. 162 a, 1921.

Wings greenish-black. Secondaries above with a white or bluish-white marginal area, somewhat variable in width, extending from, or near, the outer angle to the anal angle and broadly crossed by the black veins, varying in number from five to six according to the extent of the band. Beneath the outer half of the wing is white, crossed by the black veins, less heavily than above, the band extending from the costal margin to the anal angle. Head, palpi, collar, and anal tuft red. Shoulder-covers, tegulæ and pectus black. Fringes white, darkened toward the apex of the primaries.

Distribution. Type locality: Ecuador.

Ecuador (B).

P. aziza (Plate XXXV, Fig. 5).

Hewitson, Trans. Ent. Soc., London, 3rd Series, vol. 2, p. 483, 1866.

Hewitson, Exot. Butt., vol. iv, Pyrrh. pl. iii, fig. 19, 1871.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 173, 179, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, 1921.

Wings greenish black. Secondaries with a broad bluish-white marginal band which curves slightly inward toward the outer

angle thus leaving that part of the margin black, it is crossed by the black veins. The secondaries beneath with the basal two-thirds white, crossed by the black veins, the extreme base is narrowly black. Head, palpi, collar, and anal tuft red. Tegulae greenish black. Pectus black. Fringes white, darkened toward the apex of the primaries. *Aziza* somewhat resembles *arathyrea* on the upper side but differs below in having the white area, basal, instead of marginal as in the latter species.

Distribution. Type locality: "New Granada."

Mesopotamia, Dept. of Antioquia, Colombia (A.M.).

P. garata.

Hewitson, Trans. Ent. Soc., London, 3rd Series, vol. 2, p. 483, 1866.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 173, 179, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, pl. 162 a, 1921.

The description states that the upperside is blue black. The head, palpi and anus scarlet. Posterior wing bordered with white. Underside as above, except that the posterior wing is irrorated with pale bluish between the nervures from the middle to the outer margin. There were no specimens for study.

Distribution. Type locality: Surinam.

b. No white marginal area of secondaries. Tegulae bordered with red.

P. papius (Plate XXXV, Fig. 6).

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 369, 1874.

Plotz, Stett. Ent. Zeit., vol. xl, p. 537, 1879.

Wings deep brownish black. Fringes white, darkened toward the apex of the primaries. Head, palpi and collar black. Pectus and anal tuft red. Shoulder covers black with a red spot on each side. Tegulae red on the upper side and black on the lower side. A tuft of red hairs at the base of the thorax, on each side. Hopffer does not mention the color of the palpi but Plotz states that they are black. Mabille and Boullet appear to have identi-

fied a different insect (Ann. des Sciences Nat., Paris, p. 174, 1908) as *papius* as they say "palpi red, more or less bordered with black" and in this they are followed by Draudt (Seitz, Macrolep. of the World, vol. 5, p. 837, 1921).

The species referred to as *scylla* Menetries in the Mabille and Boulet paper, (p. 173) seems to be *papius*, while the species they refer to as *papius* seems to one that will be dealt with subsequently in this division. The Draudt figure (pl. 162 a) of *scylla* appears to represent *papius* except that the fringes of the primaries are too dark, which may be due to the printing of the figure. This insect is often misidentified as *scylla*, in collections.

Distribution. Type locality: "One specimen from New Granada and one from Moxos (Pavon)."

Colombia, Ecuador, Peru, (A.M.); (B). Brazil (A.M.).

P. decipiens (Plate XXXV, Fig. 7).

Mabille, Genera Insectorum, Hesp., p. 8 (notes), 1903.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 179, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, 1921.

Wings dark brown. Fringes of the primaries white mixed with brown scales, becoming entirely brown toward the apex; of the secondaries white. Head, palpi and collar black. Shoulder-covers black with a red spot on each side. Tegulæ red on the upper half, black on the lower. Anal tuft red. Pectus red, bordered with black on the outer edge and base. There is a small red spot near the base of the secondaries beneath.

Distribution. Type locality: In the original description Mabille gives Bolivia, but in the Mabille and Boulet paper Ecuador is given. Ecuador (B). Peru (A.M.).

P. melanomerus.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 179, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, 1921.

The original description states "Wings black on the two sides. Corselet and epaulettes red. Fringes white except at the apex of the superiors or they are black between 7 and 8. Thighs black. The writer has not seen this species."

Distribution. Type locality: Bolivia.

P. tarapotoensis new species (Plate XXXV, Fig. 8).

Male. Primaries and secondaries above and beneath dark brownish. Fringes white, darkened on the primaries from vein 3 to the apex and on the secondaries at the outer angle. Head black. Palpi red in the center, bordered with black on each side. Collar black with red hairs intermixed. Shoulder-covers black with a red spot on each side. Tegulae red on the upper half, black on the lower. Pectus black, intermixed with red in the lower three-quarters. Body black above and beneath. Legs black. Antennae black.

Expanse: 58 mm.

Type material. Holotype male, Tarapoto, Peru, in collection of the author.

This seems to be the species referred to *papius* in the Mabille and Boulet paper as noted in the remarks under that species.

c. Tegulae black. Pectus red.

P. charybdis (Plate XXXV, Fig. 9).

Hewitson, Gen. Diurn. Lep., vol. 2, pl. 78, fig. 2, 1852.

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 370, 1874.

Mabille, Ann. Ent. Soc. Belg., vol. xxi, pp. 13, 14, 1878.

Plotz, Stett. Ent. Zeit., vol. xl, p. 534, 1879.

Godman & Salvin, Biol. Cent.-Amer., Rhop., vol. 2, p. 247, 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, pl. 162 b, 1921.

Both Hopffer and Plotz are evidently correct in their determination of *charybdis* (see notes under *zeleucus* Fabricius). Capt. Riley states he has marked as the type of *charybdis* in the collection of the British Museum, the specimen in the Hewitson collection which agrees with the figure in Genera Diurnal Lepidoptera. The type and another specimen in the Hewitson collection have a rather dull greenish black color of the wings; in

the type the red shoulder covers are divided in the middle as shown in Hewitson's figure, in the other specimen they are continuous. Head and collar red. The pectus red. The tegulæ black. There are specimens before the writer which agree with these characteristics.

Distribution. Type locality: Hewitson's type came from Minas Geraes, Brazil. Manaos; Rio Grande do sul; Parana; Rio de Janeiro; Blumenau, all in Brazil (B). Brazil (A.M.).

P. polemon.

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 371, 1874.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, pl. 162 b, 1921.

The original description states that the wings are blue-black; fringes white; head, palpi and a stripe on the anterior coxæ saffron; prothorax and shoulders black; anal abdominal segment black, saffron bearded. Mabille & Boullet place *polemon* in the division having "anterior thighs black," whereas Hopffer's description states "orbita coxisque anticis croceis" and is placed in his own division, with those species "mit rothen Vorderhuften." It seems conclusive that the insect that was before Hopffer had a red pectus ("rothen Vorderhuften") and that Mabille and Boullet have identified some other species as *polemon*, incorrectly. There are no specimens before the writer that he can identify as *polemon*.

Distribution. Type locality: Brazil.

- d. Pectus black. Shoulder-covers black or only spotted with red.

P. zeleucus.

Fabricius, Ent. Syst., vol. 3, part I, pp. 346, 347, 1793.

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 370, 1874.

Mabille, Ann. Ent. Society Belg., vol. xxi, p. 13, 1878.

Plotz, Stett. Ent. Zeit., vol. xl, p. 534, 1879.

Godman & Salvin, Biol. Cent.-Amer., Rhop., vol. 2, p. 247, 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, pl. 162 b, 1921.

The Fabrician description is in itself insufficient for accurate determination of specimens. Both Hopffer and Plotz state that *zeleucus* has black anterior coxæ (pectus) and are probably correct, however, Mabille applies the name to a species having red anterior coxæ and in this are followed by Godman & Salvin and Mabille & Boulet, and also by Draudt. Godman & Salvin state that both Hopffer and Plotz have erred and have transposed the names *zeleucus* and *charybdis*, the evidence, however, does not bear out this statement, for, as noted under *charybdis*, the Hewitson type of that species has a red pectus. Capt. Riley has informed the writer that the specimen in the British Museum series of *charybdis* which Godman & Salvin apparently took to be the type of the species and which is marked "type?", has been in the collection for over one hundred years and is no. 305 in the old Museum Catalogue as "*Thamyris zeleucus*" from Brazil. It is blue-black in color and has a black pectus; the fringes white, darkened from between veins 3-4 to the apex of the primaries; the hind wing margin is more excavate than in the actual type of *charybdis*; the shoulder-covers entirely black; tegulæ black; head, collar and anal tuft red. The writer has no specimens before him which agree with this.

Distribution. Type locality: "Habitat in Indiis."

P. zenodorus (Plate XXXV, Fig. 10).

Godman & Salvin, Biol. Cent.-Amer., Rhop., vol. 2, p. 247; vol. 3, pl. 73, figs. 1, 2, 3, 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, 1921.

Wings blue-black. Fringes white, darkened toward the apex of the primaries. Head, palpi and anal tuft orange-red. Collar red. Shoulder-covers, tegulæ and pectus blue-black.

Distribution. Type locality: Actual type locality not given but the following countries are mentioned: Mexico, Guatemala, Costa Rica, E. Peru. Jalapa, Mexico (B). Cordoba, Mexico; Guatemala; British Honduras (A.M.).

P. proculus.

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 370, 1874.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 b, 1921.

The original description states that the wings are blue-black. Fringes white. Head and palpi purple-red, except the occiput, throat and "genis" which are black. Anal extremity purple-red. Prothorax and anterior coxæ (pectus) blue-black. There are no specimens at hand which agree with this description.

Distribution. Type locality: Guiana.

P. attis new species (Plate XXXV, Fig. 11).

Male. Upperside. Primaries and secondaries blue-black. Fringes entirely white or darkened toward the apex of the primaries. Beneath the wings are the same color, tinted somewhat violaceous on the inner margin of the primaries. Head, palpi and anal tuft, carmine. Collar, carmine. Shoulder-covers entirely blue-black or with a rather small, roundish carmine spot on each side. Tegulæ blue-black, sometimes with a few scattered carmine hairs at the base. Body blue-black above and beneath. Female similar.

Expanse: Male, 48 to 56 mm. Female, 60 mm.

Type material. Holotype male and allotype female, Santa Cruz, Bolivia, in the collection of the author. Paratypes, 5 males and 1 female, Santa Cruz, Bolivia, in collection of the author; 1 male, 75 kilometers northwest of Santa Cruz, Bolivia, in collection of Academy of Natural Sciences, Philadelphia, Pa.; 1 male, Viota, Colombia, in collection of the American Museum of Natural History, New York City. The form of the genitalia is similar to that of *phidias* Linnaeus but the lack of the white area at the base of the secondaries beneath readily separates the two species and the secondaries of *attis* are not quite so concave

on the outer margin as in *phidias*. The three following species are very similar to *attis* in their superficial appearance and they can be separated satisfactorily only by the form of the male genitalia.

P. rileyi new species (Plate XXXV, Fig. 12).

Male. Upperside blue-black. Beneath the same, tinted violaceous on the inner margin and base of the primaries. Head, palpi and anal tuft, carmine. Collar, carmine. Shoulder-covers and pectus, blue-black. Tegulæ, blue-black. Fringes white, darkened at the apex of the primaries.

Expanse: 52-54 mm.

Type material. Holotype male and 3 male paratypes, Santa Cruz, Bolivia, in collection of the author.

This species is usually somewhat smaller than *attis*, but as small specimens of *attis* occur, they cannot be accurately separated on size. The form of the male genitalia is different in the two species, as the figures show.

This species is named for my friend, Capt. N. D. Riley.

P. amythaon new species (Plate XXXV, Fig. 13).

Male. Upperside. Primaries and secondaries, greenish-black. Beneath the same, tinted violaceous-brown at the base of the primaries. Fringes white, darkened toward the apex of the primaries. Head, collar and anal tuft, red. Shoulder-covers, pectus and tegulæ, blue-black.

Expanse: 56 mm.

Type material. Holotype male, Pernambuco, Brazil, in collection of the American Museum of Natural History, New York City.

This species, in the one specimen at hand, has a more greenish sheen than the two previous species and the form of the genitalia is quite distinct.

P. williamsi new species (Plate XXXV, Fig. 14).

Male. Upperside. Primaries and secondaries dark greenish or bluish black. Beneath the same, tinted violaceous on the inner margin, and brownish at the base, and along the costal margin of the primaries for about one-half the length. Fringes white, darkened at the apex of the primaries and a little at the outer angle of the secondaries. Head red in front and half way back behind the antennæ, the rest black; the red part at the back of the head is confined to the central part. Anal tuft, red. Collar, red in the center, the rest black. Shoulder-covers and tegulæ, black. Pectus

black. The females associated with this species are similar, except that the red part of the head behind the antennæ is broader, so that the black border at the sides is absent.

Expanse: Male, 50–56 mm. Female, 56–58 mm.

Type material. Holotype male, Peru, in collection of the author. Allotype female, Caracas, Venezuela, in collection of the American Museum of Natural History, New York City. Paratypes: 1 male, St. Ann's, Trinidad, in collection of the author; 1 male, Colombia or French Guiana, in collection of the Academy of Natural Sciences, Philadelphia, Pa.; 1 male, Colombia, 1 male, Caracas, Venezuela, 1 female, Caracas, Venezuela, in collection of American Museum of Natural History, New York City.

This species is named for my friend, Capt. R. C. Williams, Jr.

This species is apparently close to *proculus* Hopffer, but the description of that species states that the entire back of the head is black.

e. Pectus black. Shoulder-covers red.

P. lamprus.

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 370, 1874.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, p. 174, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, pl. 162 b, 1921.

The description states that the wings are blue-black on both sides. Fringes white. Head, palpi, "genis," prothorax, shoulders, last two abdominal segments of the male, of the female the anal segment only, are blood-red. Anterior coxæ black. Hopffer compares *lamprus* with *charybdis* Hewitson from which he distinguishes it by *lamprus* having black anterior coxæ instead of red as in *charybdis*, an additional red abdominal segment and red shoulders. Mabille & Boulet misspell the name "*lampros*" and place it in the division having "prothorax black" despite the fact that Hopffer distinctly says "prothorace sanguineis." The misspelling of the name has been continued by other authors.

Distribution. Type locality: Brazil.

The writer cannot identify any of the specimens before him, as *lamprus*.

- f. Third and fourth abdominal segments edged with red, fifth and sixth, red.

P. roscius.

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 370, 1874.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, 1921.

The description states that the wings are blue-black. Fringes white. Head black, varied with red hairs. Palpi, prothorax, shoulders and fifth and sixth abdominal segments blood-red, third and fourth abdominal segments posteriorly bordered with blood-red. Anterior coxæ, black.

Distribution. Type locality: Brazil.

The writer has not seen this species.

- g. Pectus white striped with carmine tufts. Palpi white.

P. rhacia.

Hewitson, Exot. Butt., vol. v, Pyrrh. pl. v, fig. 37, 1874-1875.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 b, 1921.

The description states that the wings are blue-black, the posteriors tinted with green beneath. Fringes white. Front of the thorax broadly carmine. Palpi white. Breast marked with two longitudinal bands of white with tufts of carmine hair.

Distribution. Type locality: Minas Geraes.

The writer has not seen this species.

- h. With a white area at the base of the secondaries, or primaries or both.

P. phidias (Plate XXXVI, Fig. 15).

Linnæus, Syst. Nat., 10th Ed., vol. 1, p. 485, 1758.

- Linnæus, Mus. Ulr., p. 334, 1764.
Linnæus, Syst. Nat., 13th Ed., vol. 1, part 2, p. 795, 1767.
Godman & Salvin, Biol. Cent.-Amer., vol. 2, pp. 246, 247; vol. 3, pl. 73, fig. 4, 1893.
Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 180, 1908.
Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 c, d, 1921.
mænas Fabricius, Mant. Ins., vol 11, p. 90, 1787; Ent. Syst., vol. 111, part 1, p. 347, 1793.

We follow Godman & Salvin in applying the name *phidias* to the insect in which the form of the male genitalia agrees with the "Biologia" figure. We also follow authors in placing *mænas* Fabricius as a synonym of *phidias*, the descriptions of these two being entirely insufficient for accurate determination. Draudt places *mænas* as a synonym of *bixæ* Cramer but that insect in the typical form has a white band extending across the base of the primaries also, whereas the Fabrician description mentions only a white band on the secondaries. *Phidias* is a robust insect, the wings greenish or bluish-black with a brilliant sheen. Head, collar and anal tuft, red. Pectus, shoulder-covers and tegulæ, blue-black. Fringes white, darkened at the apex of the primaries. The white basal band of the underside of the secondaries is usually narrow, irregular on the outer edge, and spotty in appearance, however, it varies in appearance among individuals. In occasional specimens there is a small accumulation of white scales in the basal area of the primaries and sometimes a few red hairs are intermixed at the base of the pectus, barely noticeable except under a lens. There does not seem to be any difference in the form of the genitalia associated with these slight differences in maculation.

Distribution. Type locality: Syst. Nat., 1758, gives "Asia"; Mus. Lud. Ulr., "Luzonis." Of *mænas* "Habitat in America."

Chiva Chiva Trail, Pedro Miguel, Canal Zone, Panama; Muzo, Colombia; French Guiana;

Santa Cruz, Bolivia; Brazil (B).

Peru (A.M.).

P. pseudophidias new species (Plate XXXVI, Fig. 16a, typical; Fig. 16b, variation).

Of the same color and general appearance as *phidias* Linnaeus, but averaging slightly smaller in size. The white basal band of the underside of the secondaries is also similar and there does not seem to be any good superficial character that will separate the two species. The form of the male genitalia is quite different as the figures show. Figure 16b shows a variation in the genitalia, in the extent of the production of the flanges at the base of the uncus, these being much shorter than in the typical form.

Expanse: Male, 48-58 mm. Female, 58 mm.

Type material. Holotype male, Muzo, Colombia; allotype female, Colombia, in collection of the author. Paratypes, 2 males, Muzo, Colombia, 3 males and 1 female, Colombia, 1 male, east Colombia, 1 male, Gatun, Canal Zone, Panama, 1 male, Chiva Chiva Trail, Pedro Miguel, Canal Zone, Panama, 1 male, Ecuador, 1 male, St. Laurent, French Guiana, 1 male and 1 female, Zanderij Island, Surinam, in collection of the author. 3 males, Colombia or French Guiana, 1 male, French Guiana, 1 female, Muzo, Colombia, in collection of the Academy of Natural Sciences, Philadelphia, Pa. 1 male, Cruces Trail, near Corozal, Canal Zone, Panama, 1 male, locality unknown, in collection of American Museum of Natural History, New York City.

The form of the genitalia of *pseudophidias* is quite similar to that of *rileyi* and it may be possible that they are forms of one species.

P. latifasciata (Plate XXXVI, Fig. 17).

Butler, Cist. Ent., vol. 1, p. 176, 1873.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 d, 1921.

This species resembles *phidias* Linnæus on the upper side but the white basal band of the underside of the secondaries is usually broader and somewhat angulated externally in the center, the width, however, varies among individuals, which show no

difference in the form of the genitalia. The wings are a shining greenish or bluish-black. Head red, entirely or partly black back of the antennæ, and a black spot in front of the antennæ. Palpi and anal tuft red. Collar usually black, sometimes with a few red hairs intermixed. Pectus, shoulder-covers and tegulæ black. Fringes white, darkened toward the apex of the primaries.

Distribution. Type locality: Bogota.

East Colombia; St. Laurent, French Guiana;
French Guiana; Iquitos, Peru (B).

Bogota, Colombia (A.M.).

Capt. Riley has very kindly made an examination of the genitalia of Butler's type and sent an excellent drawing of it to the writer, with which Fig. 17 agrees in all essential details. The form is very similar to that of *williamsi* (Fig. 14) but that species has no white at the base of the secondaries beneath.

P. infantilis (Plate XXXVI, Fig. 18).

Druce, Trans. Ent. Soc. London, part 2, p. 377, pl. xxi,
fig. 1, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838,
pl. 162 c, 1921.

The wings are dark bluish usually, but in one specimen with a slight greenish sheen. Head red in front and just behind the antennæ in the center, the rest black. Palpi and anal tuft red. Collar, pectus, shoulder-covers and tegulæ, black. Fringes white, darkened toward the apex of the primaries. The white basal band of the underside of the secondaries is broad and occupies the basal half of the wing. In one specimen there is a small accumulation of white scales at the base of the primaries. Of the three males and one female before the writer one came from Peru the others from Brazilian localities, all of the males agreeing in the form of the genitalia, that of one of the Brazilian males being here figured.

Distribution. Type locality: Peru.

Manicore, Rio Madeira, Brazil (As.). Peru;
Rio Caiary-Uaupes, State of Amazonas, Brazil
(A.M.). Manicore (B).

P. andronicus new species (Plate XXXVI, Fig. 19).

Male. Upperside. Primaries and secondaries blue-black, with a slight greenish reflection in certain lights. Beneath the same with a violaceous tint on the inner margin of the primaries. Secondaries with a white basal band, narrow as in *phidias* Linnaeus and angulated outwardly in the center. Body blue-black. Head red in front and just behind the antennæ, the rest black. Palpi, and anal tuft red. Collar, pectus, shoulder-covers and tegulæ black. Fringes white, darkened toward the apex of the primaries.

Expanse: 52-56 mm.

Type material. Holotype male, Macas, Ecuador, in collection of the author. Paratypes, 3 males, Macas, Ecuador; 4 males, Ecuador; 1 male, Colombia, in collection of the author; 1 male, Ecuador, in collection of the Academy of Natural Sciences, Philadelphia, Pa.

This insect has a much narrower white basal band on the underside of the secondaries than *infantilis* Druce, and it is also narrower than in *latifasciata* Butler. The Colombian paratype agrees in the form of the genitalia with those from Ecuador, but the white basal band is somewhat broader and noticeably angulated in the center.

P. draudti new species (Plate XXXVI, Fig. 20).

Male. Upperside. Both wings blue or greenish-black. Beneath the same, somewhat tinted violaceous on the inner margin and base of primaries, which also have two short white rays, one above and one below the costal vein, arising from near but not quite reaching the base, the one below the vein extending further outward than the upper one; a small accumulation of white or pale brownish scales just below the base of the cell, and sometimes in the base of the cell; in the two paratypes from Venezuela there is a small white patch below vein I in the basal third of the inner margin.

Secondaries with a rather narrow, white basal band, curved below the cell toward the inner margin. Fringes white, darkened at the apex of the primaries. Body black. Head red, with a moderate sized black spot before the antennæ. Palpi and anal tuft red. Collar black with a few red hairs in the center, absent in one paratype. Pectus, shoulder-covers, and tegulæ black.

Expanse: 50-56 mm.

Type material. Holotype male, Santa Cruz, Bolivia, in collection of the author. Paratypes, 4 males, Santa Cruz, Bolivia; 1 male, St. Laurent, French Guiana, in collection of the author.

2 males, Porto Cabello, Venezuela; 1 male, Rio Songo, Bolivia, in collection of the Academy of Natural Sciences, Philadelphia, Pa.

This species in general appearance is somewhat like *phidias* Linnæus. It seems to be the insect that Mabilie and Boullet (Ann. des Sciences Nat., Paris, p. 175, 1908) and Draudt (Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 c, 1921) refer to as *fluminis* Butler, the type of which has a very broad white basal band of both primaries and secondaries; and in which species the form of the genitalia is similar to that of *scylla* Menetries placed in group B of this paper. The specimens before the writer very well agree with the Draudt figure above referred to. Capt. Riley has informed the writer that there are specimens in the British Museum collection, agreeing with the Draudt figure, from Caracas, Venezuela; Villa Nova, Amazons; Pebas, East Peru; Rio Colorado, Peru.

2. Fringes yellow or yellowish. Wings with a green or blue sheen. (In *pelota* Plotz the fringes shade to orange-yellow. In *denticulata* Herrich-Schaffer fringes of secondaries white.)

P. *pelota* (Plate XXXVI, Fig. 21).

Plotz, Stett. Ent. Zeit., vol. xl, p. 535, 1879.

Mabilie & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 166 a, 1921.

Wings greenish black. Fringes and a narrow marginal band pale- to orange-yellow; in specimens from Paraguay the color is pale yellow and the band narrow, in those from Bolivia the color is more orange-yellow and the band a little broader. Head, palpi, pectus, collar, shoulder-covers and anal extremity, red. Tegulæ black. The form of the claspers deviates somewhat from the other members of this group.

Distribution. Type locality: Brazil.

Santa Cruz, Bolivia; Villarica, Paraguay (B).

Villarica, Paraguay (A.S.).

P. denticulata.

Herrich-Schaffer, Corresp.-blatt, Regensburg, vol. xxiii, p. 165, 1869; (Prodr. Syst. Lep., part 3, p. 57, 1869).

Plotz, Stett. Ent. Zeit., vol. xl, p. 535, 1879.

Godman, Ann. & Mag. Nat. Hist., ser. 7, vol. xx, p. 150, 1907.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, 1921.

The description states that the fringes of the primaries are yellow and of the secondaries white. Godman states that the species is a *Mysoria* near *pelota* Plotz and that the Plotz figure is from a Rio Negro specimen.

The writer does not know the species.

P. josepha.

Plotz, Stett. Ent. Zeit., vol. xl, p. 534, 1879.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, 1921.

The Plotz description states that the wings are dark green or blue, border of the hind wings somewhat excavated between the veins. Fringes yellow. Palpi and anal extremity red. The writer does not know this species.

Distribution. Type locality: Brazil.

P. josephina.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 162 g, 1921.

The description states that the fringes are white with a yellowish tint. A fine antemarginal line, orange-yellow, on the forewings as fine as a hair. Head, palpi and abdominal extremity red, femora black. The writer has not seen this species.

Distribution. Type locality: Songo, Bolivia.

P. mina new species (Plate XXXVI, Fig. 22).

Male. Upperside. Both wings greenish-black. Fringes of primaries pale yellow, darkened from vein 4 to the apex; of the secondaries pale yellow.

low with an orange spot at the end of each vein, not crossing the entire width of the fringe. Beneath same as above, except that the primaries are tinted a little violaceous on the inner margin and at the base. Head, palpi, collar and anal tuft, red. Pectus, shoulder-covers and tegulæ, black.

Expanse: 54 mm.

Type material. Holotype male, Bolivia, in collection of the author.

This species is named for Mrs. Mina A. Bell.

This species differs from the description of *josephina* Draudt in that the fringes are obviously yellow and have the orange spot at the vein ends of the secondaries and in the lack of any trace of an antemarginal line on either primaries or secondaries.

P. viriditas.

Skinner, Ent. News, vol. xxxi, p. 132, 1920.

The description states "Head, collar and palpi red. Thorax blue above, black below. Abdomen and legs black. Anal tuft orange. Wings dark green above and below. Fringes yellow; very narrow on the primaries and a little more than 1.5 mm. wide on the secondaries.

"Expanse (one wing) 27 mm."

Distribution. Type locality: San Pedro Sula, Honduras.

3. Fringes yellow, orange-yellow or red. Wings brown, olive brown or brownish black.

a. Secondaries beneath red-spotted at the base. Pectus black.

P. martena (Plate XXXVI, Fig. 23).

Hewitson, Exot. Butt., vol. iv; Pyrrh. pl. I, fig. 4, 1869.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 166 b, 1921.

The wings are blackish brown, through which the veins show a little darker on the upper side. The primaries have a few red scales along the outer border inside of the fringes. The secondaries have a red marginal band varying in width, usually very broad and cut into by the black veins, making a somewhat dentate inner edge, but when the band is narrower it has a more

even inner edge. On the underside, the red scales on the outer border of the primaries extend further inward in the interspaces between veins 1 and 5. The red marginal band of the secondaries is very broad and crossed by the black veins. The red basal spot extends from the upper part of the cell base to almost the costal margin and in the typical form it is extended outward to the anal angle as a broad red stripe, where it merges with the outer marginal band, in the space above the costal vein; this extension varies with individuals and is sometimes reduced to a few scattered scales barely noticeable except under a lens. The fringes of both wings are red, black at the anal angle of the primaries, often black at the tip of the fringe, and variably intermixed with black toward the apex of the primaries. Head, palpi, collar and pectus, black. Shoulder-covers black with a red spot on each side. Tegulae red on the upper half, black on the lower. Anal tuft red. A tuft of long, black and red hairs extending from the base of the thorax along each side of the abdomen.

Distribution. Type locality: Ecuador. Ecuador (B).

P. croceimargo (Plate XXXVI, Figs. 24, 25).

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 162 f, 1921.

Wings above olive-brown with considerable sheen, the veins outlined in black. Beneath somewhat paler and with a sheen, the black veins showing through. The secondaries with a rather irregular, red basal area or spot which extends across the cell to the costal margin. Fringes orange-yellow. Head, palpi, collar and pectus are black. Shoulder-covers black with a red spot on each side. Tegulae rather narrowly bordered on the upper side with red, the rest black. Anal tuft red. There are also three specimens from Ecuador which closely agree with those from Bolivia and Peru in the form of the genitalia but differ superficially in that the ground color of the wings is considerably darker on both sides and the sheen therefore less noticeable, the red basal area of the under side of the secondaries is in the form

of two distinct, roundish spots, the red spot on each side of the collar is either absent or confined to a very few red hairs, not noticeable except under a lens and the fringes are more orange-red. Figure 24 is from a specimen from Peru, figure 25 is from one from Ecuador.

Distribution. Type locality: Bolivia. Songo. Bolivia; Peru; Ecuador (B). Peru (A.M.).

P. telassa.

Hewitson, Trans. Ent. Soc., London, 3rd series, vol. 2, p. 484, 1866.

Hewitson, Exot. Butt., vol. iv, Pyrrh. pl. I, figs. 2, 3, 1869.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 162 g, 1921.

The description states "Upperside, female, rufous-brown; the outer margins orange, narrow, a longitudinal band on each side of the thorax, and the anus scarlet. Underside as above, except there are two scarlet spots at the base of the posterior wings."

Distribution. Type locality: Ecuador.

P. telassina.

Staudinger, Exot. Schmett., part I, p. 295, pl. 99, 1888.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, p. 178 (as form of *cleopas*), p. 182 (as form of *telassa*), 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, 1921.

Rober, Ent. Mitteil., vol. xiv, p. 100, 1925.

Staudinger distinguished *telassina* from *telassa* Hewitson by the marginal band of the hindwings being only one-third to one-half as broad in *telassina*, and orange instead of scarlet, also by the complete red-brown basal band of the secondaries beneath, which in *telassa* is represented by two scarlet spots, according to the Hewitson description. Rober considers *telassina* to be a distinct species and says that it also differs from *telassa* in the

lighter color of the upper side, which has an olive-green sheen; with only a little brownish hair at the base of the thorax instead of a red hair-tuft; shorter and yellow (not red) fringes of the forewings; shorter red anal tuft; in the little contrast between the color of the primaries and secondaries beneath and in the different shape of the basal red spots on the underside of the secondaries. No mention is made in the original description or in Rober's paper as to the color of the pectus; Mabille and Bouillet place *telassina* in the division having a black pectus and we are assuming that they are correct, there being no specimens available.

Distribution. Type locality: Chanchamayo, Peru.

P. tenuis.

Staudinger, Exot. Schmett., part I, p. 295, 1888.

Staudinger described *tenuis* as a form of *telassina*, from which he distinguished it by the very narrow orange marginal band of the hind wings and the brownish red basal spots beneath being formed as in *telassa*, that is, two spots instead of a short, complete band. Mabille and Bouillet (Ann. des Sciences Nat., Paris, p. 179, 1908) place *tenuis* in the division having no red basal spots on the underside of the secondaries, it therefore seems that the insect they refer to must be some other than *tenuis* Staudinger. Draudt (Seitz, Macrolep. of the World, vol. 5, p. 840, 1921) credits the authorship to Mabille & Bouillet. There is nothing before the writer that can be identified as *tenuis*.

Distribution. Type locality: Chanchamayo, Peru.

P. mendax.

Mabille & Bouillet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 183, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, 1921.

The description states that the ground color of the wings is black. Secondaries beneath red-spotted at the base. Fringes orange, narrow and blackened on the primaries from vein 5. Shoulder-covers with the extremity red haired. Anterior thighs not red spotted. The writer has not seen this species.

Distribution. Type locality: Peru.

P. punctata.

Rober, Ent. Mitteil., vol. xiv, p. 156, 1925.

Rober allies *punctata* with *phylleia* Hewitson, from which he distinguishes it principally by the more blackish ground color of both sides of the wings; the lighter colored fringes and marginal band; different red hairing of the collar; broader marginal band of the secondaries which is divided by the brown veins; a small red spot at the end of the cell on the underside of the secondaries and palpi and head a darker red. On account of the red spot on the underside of the secondaries, we include *punctata* here in the division having that characteristic. The description does not state the color of the pectus, so we assume that it is black as in *phylleia*. There are no specimens of this species at hand.

Distribution. Type locality: Rio Songo, Bolivia.

P. cleopas.

Mabille, Genera Ins., Hesp., p. 9, 1903. (Manuscript?).

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 183, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, 1921.

The writer has been unable to locate a description of *cleopas* other than that contained in the Mabille & Boullet key, although Mabille lists the species in "Genera Insectorum." In the Mabille and Boullet paper *cleopas* is placed in the group having red spots in the basal area of the secondaries beneath, anterior thighs without red spots and with the following characters: fringes broad, orange almost as far as the apex of the primaries, without the band of the secondaries.

Nervures prominently black on both sides of the wings. Epaulettes bordered with red interiorly. Anus red. There is nothing before the writer that he can identify as this species.

Distribution. Mabille & Boullet give Bolivia and Peru.

- b. Secondaries beneath red-spotted at the base. Pectus red-striped.

P. schausi new species (Plate XXXVI, Fig. 26).

Upperside. Both wings deep brownish black, veins very little darker. Beneath the same, inner marginal half of the primaries paler. Fringes and

a narrow, somewhat irregular, marginal band of the primaries are red. The fringes and a much broader marginal band of the secondaries are also red, the band is dentate on the inner edge. Beneath on both wings the marginal band is the same as above, except that on the secondaries it extends a little further inward on both sides of the costal vein. A red basal band of the secondaries, similar to that of *martena* Hewitson, extends from near the base of the cell to the costal margin, and in some individuals is narrowly extended to the marginal band, in scattered scales, above the costal vein. Head, palpi, and collar are black. Pectus black externally, red internally. Shoulder-covers black with a red spot on each side. Tegulae red on the upper half, black on the lower half. Anal tuft red. Body black. A tuft of red hairs at the base of the thorax on each side.

Expanse: 58-62 mm. (one small individual, 52 mm.).

Type material. Holotype male, Ecuador, in collection of the author. Paratypes, 9 males, Ecuador, in collection of the author; 3 males, Ecuador, in collection of American Museum of Natural History, New York City.

Named for my friend, Dr. William Schaus.

This species resembles *martena* Hewitson, but the pectus is red-striped and not black as in *martena*; the fringes are entirely red to the apex of the primaries, whereas in all of the specimens of *martena* at hand they are more or less sprinkled with blackish. The genitalia differ in form from *martena* in the more slender termination of the elaspers, and in the shape of the flanges at the base of the uncus. These differences were shown in all of the specimens of each species examined.

P. pheax (Plate XXXVI, Fig. 27).

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 368, 1874.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 183, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 162 g, 1921.

Hopffer's description states that the wings are olive-brown, with darker veins. Body black. Shoulder-covers (tegulae) and anterior coxae (pectus) black inwardly red haired. Anus saffron. Fringes saffron. Posterior wings with three saffron basal spots. No marginal band of the posteriors. The single specimen identified as this species agrees very well with the descrip-

tion and is from an unknown locality. The form of the male genitalia is very close to that of *croceimargo*.

Distribution. Type locality: Chanchamayo, Peru.

P. olivacea (Plate XXXVII, Fig. 28).

Rober, Ent. Mitteil., vol. xiv, p. 86, 1925.

The description states that this species is like *croceimargo*, both sides of the wings darker, the upper side with a dark olive sheen, under side of the hindwings almost black, without a greenish sheen. Fringes yellow, darker than in *croceimargo*. Veins not standing out in darker color. Breast red. Shoulder-covers more extensively red than in *croceimargo*. Palpi and head black. Collar black with a red spot on each side. Anal tuft yellow red. The parts referred to above as "breast," "shoulder-covers" and "collar" are taken to those shown in Fig. A as "pectus," "tegulæ" and "shoulder-covers."

There are two specimens from Peru before the writer which may be *olivacea* as they agree fairly well with the description except that they have a narrow marginal band of orange-yellow on the secondaries beneath, which is not mentioned in the description. There is also another specimen from Bolivia which is lighter in color above and beneath, with some olive sheen on the under side of the wings also, the marginal band of the under side of the secondaries reduced still further, to a mere line, and which does not materially differ in the form of the genitalia from the Peruvian specimens.

Distribution. Type locality: Peru.

c. Secondaries beneath without red spots. Tegulæ red striped. Head black. Pectus red.

P. rubricolor (Plate XXXVII, Fig. 29).

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, 1921.

Wings blackish brown on both sides, somewhat paler on the inner margin of the primaries beneath. Fringes red, black at the apex of the primaries; on the underside of the secondaries

the red encroaches a little on the margin of the wings. Head, palpi and collar are black. Pectus black at the base, the rest red. Shoulder-covers black with a red spot on each side. Tegulae, upper half red, lower half black. Anal tuft red.

Distribution. Type locality: The description states "Bolivia. Coll. Mus. Paris (Coll. Boulet), 1 male, Equateur.-Coll. Mab. 2 males, Equateur." Yungilla, Ecuador (B). French Guiana (A.S.).

d. Tegulae red-striped. Head black. Pectus black.

P. hadassa (Plate XXXVII, Fig. 30).

Hewitson, Trans. Ent. Soc., London, 3rd series, vol. 2, p. 484, 1866.

Hewitson, Exot. Butt., vol. iv; Pyrrh. pl. I, fig. 1, 1869.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 179, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 162 f, 1921.

The description states "Upperside, female, rufous-brown; the outer margins of both wings orange; a longitudinal band on each side of the thorax, and the anus scarlet."

The figure in Exot. Butt. shows a rather narrow marginal band of the wings, which follows the contour of the margin. Mabille & Boulet say that the band is much broader than the fringe, but the Hewitson figure does not show this. The Draudt figure does not exactly agree with the Hewitson figure in the width of the band. This character may be variable, of course. The two specimens at hand are from Bolivia and they have a marginal band of the secondaries broader than the fringes, thereby agreeing with the key of Mabille & Boulet and the Draudt figure. The genitalia of one of the Bolivian specimens is figured and is somewhat similar in form to *rubricor*.

Distribution. Type locality: Ecuador.

Rio Songo, Bolivia (B).

P. pseudohadassa.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 179, 182, 1908.

Draudt, Seitz, *Macrolep. of the World*, vol. 5, p. 840, 1921.

Wings blackish brown on both sides. Fringes orange, of primaries darkened at the apex; on the secondaries preceded by a very narrow, orange, marginal band on the upper side, which is wider beneath and a little dentate. Head, palpi, collar and pectus are black. Shoulder-covers black with a red spot on each side. Tegulæ, upper half red, lower half black. Anal tuft red. In one individual at hand, from Peru, the color of the fringes is paler orange and there is no marginal band on the upper side of the secondaries, beneath the marginal band is very narrow. There is no material difference in the form of the genitalia in these specimens, which also agrees with Fig. 30 as *hadassa* Hewitson.

Distribution. Type locality: Bolivia.

Amazons, Bolivia, Peru (Mab. & Boull.).

Huancabamba, Peru (B).

P. creona.

Druce, *Cist. Ent.*, vol. I, p. 290, 1874.

Mabille & Bouillet, *Ann. des Sciences Nat.*, Paris, 9th series, pp. 174, 179, 1908.

Draudt, Seitz, *Macrolep. of the World*, vol. 5, p. 837, pl. 162 a, 1921.

aurora Mabille, *Ann. Soc. Ent. Belg.*, vol. xxxv, (C. R. series iv, p. cix) 1891.

The description states that the upper side of the male is brownish-black, speckled between the nervures with orange scales, the fringe of both wings bright orange. The back with two longitudinal bands of crimson, and a tuft at the base of the abdomen, the anus scarlet. The underside bright orange, anterior wings with the base and half the costal margin black, the outer margin dusky; the posteriors black at the base and broadly black at the abdominal margin, the nervures of both wings black. Of the appearance of *hadassa* above but very different beneath.

Mabille & Bouillet and Draudt include *creona* among the species having white fringes, but the description states that they are "bright orange." Mabille & Bouillet place *aurora* as a synonym of *creona*.

There were no specimens available for examination.

Distribution. Type locality: Peru. (Of *aurora*, the original description says "Bresil," but the Mabilles & Boulet paper says "Bolivie.")

e. Tegulæ black. Head red. Pectus black.

P. *hades* (Plate XXXVII, Fig. 31).

Mabilles, (Staudinger in lit., *fide* Mabilles), Genera Ins., Hesp., p. 9, (notes), 1903.

Mabilles & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 162 g, 1921.

The wings blackish-brown on both sides, a little paler on the inner margin of the primaries beneath. Fringes orange-yellow, which may or may not be darkened at the apex of the primaries. On the secondaries there is a marginal orange-yellow band, about as wide as the fringes, beneath the same or a little wider. On the primaries beneath a narrow orange-yellow marginal band. Head, palpi and collar, red. Pectus black. Shoulder-covers black, with a red spot on each side. Tegulæ black. Anal tuft red.

Distribution. Type locality: Bolivia.
Bolivia, Peru (B).

P. *amyclas* (Plate XXXVII, Fig. 32).

Cramer, Pap. Exot., vol. 3, p. 13, pl. 199, fig. F, 1782.

Mabilles & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 162 f, 1921.

amiatus Fabricius, Ent. Syst., vol. 3, part I, p. 347, 1793.

laonome Swainson, Zool. Illust., pl. 61, fig. 2, text on following unnumbered page, 1820.

The wings are dark brown on both sides. The fringes orange-yellow, preceded by a marginal band of the same color, that of the secondaries wider and dentate interiorly; that of the pri-

maries a little wider beneath than above. Head, palpi, collar and anal tuft are red. Shoulder-covers black with a red spot on each side. Tegulæ blackish. There is a black spot of variable size on the front of the head before the antennæ. There seems to be considerable variation in the width of the marginal band, the characters of the band mentioned above, are from Surinam specimens and considered typical, agreeing with the Cramer figure. In a male from Venezuela the band is lacking on both sides of the primaries, that of the secondaries being barely indicated above and very narrow below. In a male from Colombia the band is lacking on the primaries above and very narrow beneath, of the secondaries very narrow on both sides, and a female from the same country has much narrower bands than the same sex from Surinam. A male from Bolivia approximates the Colombian male. A male from Santarem, Brazil, has the bands about one-half the width of the Surinam male. The form of the genitalia in these individuals differs only in the termination of the claspers, it being narrow in the Surinam male, a little wider in the Bolivian and still wider in the Brazilian males, but in all essential characters they are the same. The figure here given is from a Surinam male.

Distribution. Type locality: Surinam, Dutch Guiana.

Surinam; Bolivia (B). Venezuela; Georgetown, British Guiana; Colombia (A.M.). Santarem, Brazil (A.S.).

P. phylleia (Plate XXXVII, Fig. 33).

Hewitson, Bolivian Butt., p. 20, 1874.

Hewitson, Exot. Butt., vol. v; Pyrrh. & Eryc., pl., fig. 39 (not fig. 38), 1874-1875.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 162 g, 1921.

Wings dark purplish-brown on both sides, a little paler on the inner margin of the primaries beneath. Head red in front of the antennæ, in the center back of the antennæ, the sides black. Collar and palpi red. Pectus black. Shoulder-covers black

with a small red spot on each side. Tegulae black. Anal tuft red. Fringes of the primaries orange-red, intermixed with blackish at the apex; of the secondaries deep red, preceded by a marginal band of the same color, as wide as or a little wider than the fringes. On the underside the marginal band is a little broader and somewhat dentate on the inner edge.

Distribution. Type locality: Bolivia.

Rio Songo, Bolivia (A.S.).

P. haemon.

Godman & Salvin, Biol. Cent.-Amer., Rhop., vol. 2, p. 248, 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 179, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, 1921.

Godman & Salvin say "This species comes close to *phylleia* Hew., of Bolivia, but differs in having a rather wide rufous-orange margin to the secondaries instead of a narrow one as in the allied form. Like *phylleia* it has a red head and black coxae to the anterior legs, in the former character differing from *P. hadassa* and its allies." There have been no available specimens for examination.

Distribution. Type locality: Costa Rica.

f. Primaries with red or yellow rays.

P. kelita (Plate XXXVII, Fig. 34).

Hewitson, Exot. Butt., vol. iv; Pyrrh., pl. I, figs. 6, 7, 8, 1869.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 183, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 162 h, 1921.

Wings blackish-brown on both sides. Primaries above with red rays in interspaces 1, 2, sometimes in 3, and in the cell. Secondaries with the outer margin somewhat undulate. Beneath the rays of the primaries are repeated, more extended, and somewhat paler in color. The secondaries beneath with a broad

orange ray in the cell and one in each interspace from immediately below the cell to the costal margin. Fringes orange, darkened at the apex of the primaries. Head, palpi, collar black. Pectus black externally, red internally. Shoulder-covers black with a red spot on each side. Tegulæ black on the lower half, red on the upper. Anal tuft red. A red hair tuft at the base of the thorax on each side.

The form of the male genitalia is peculiar and resembles that of *papius* Hopff.

Distribution. Type locality: Apolobamba, Bolivia.
Bolivia (B).

P. kelita form tristis.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 183, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, 1921.

The description states that *tristis* differs from the typical form in the fringes of the forewings being darkened from vein 3 instead of only at the apex, the fringes narrower, the rays narrower and pale orange.

4. Fringes black.

P. thericles.

Mabille, Ann. Soc. Ent. Belg., vol. xxxv, (C. R., ser. iv, pp. cviii-cix), 1891.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, 1921.

The description states that the wings are deep black with a dark blue reflection. Base of the secondaries beneath with a rounded bluish-white spot occupying about one-third of the base of the wing, a little dentate between the nervures. Palpi, vertex and anus scarlet red. Fringe of the primaries black; of the secondaries "rouge obscur." The Mabille & Boulet paper does not quite agree in the color of the fringes, as it places *thericles* in the division "Les 4 ailes a franges noires." The writer has not seen this species.

Distribution. Type locality: "Masauary." Mabilie & Boullet say Bolivia.

P. cardus.

Mabilie, Ann. Ent. Soc. Belg., vol. xxv, (C. R., ser. iv, p. cviii), 1891.

Mabilie & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, 1921.

The description states that the wings are above deep black with a blue reflection. The external border of the primaries strongly sinuate. The secondaries with a small blue spot above and a broad, bluish-white basal spot beneath, cut into unequal spots by the veins. Palpi, vertex and anus scarlet. Occiput and collar black.

There are no specimens of this species at hand.

Distribution. Type locality: Brazil. Mabilie & Boullet say Bolivia.

P. hyleus.

Mabilie, Ann. Soc. Ent. Belg., vol. xxxv, (C. R., ser. iv, p. cviii), 1891.

Mabilie & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, 1921.

The description states that this species resembles *cardus* but is larger and more robust. The secondaries above have a broad, rounded bluish-white spot, and beneath a broad white basal spot separated from the body by black and extended on the veins to beyond the cell where it is colored more bluish. Palpi, head and anus red. Mabilie & Boullet place this species and *cardus* in the division having black fringes on all wings, the descriptions of the two do not mention the color. Mabilie and Boullet mention only one large white spot which we assume refers to the one on the underside of the secondaries. They also misspell the name "*hylocus*" on page 181.

Distribution. Type locality: "Itaituba." Mabilles and Boulet say Bolivia.

GROUP B. *P. scylla* section

Genitalia. Included in this group are those species having the same form in the male genitalia as that of *scylla* Menetries. The uncus terminates in a single, down-curved point. The flanges at the base of the uncus are short, usually somewhat roundish, serrate and shagreened. The girdle and saccus are shorter than in group A. The œdœagus is rather short, stout, and turned downward and pointed at the tip, with a collar-like girdle. The claspers are practically symmetrical and terminate in a long arm, usually curved, tapering and pointed at the apex, with numerous serrations on either or both dorsal and ventral edges and more or less shagreened on the sides. The upward projections from the dorsal edge, at the base of the terminal arm of the claspers, are usually not present in this group. There is a great similarity in the genitalia in some of the species in this group which are readily separated on their superficial characters.

1. Fringes white.

a. Pectus black.

P. scylla (Plate XXXVII, Fig. 35).

Menetries, Enum. Corp. Anim. Musei Imp. Acad.

Scient. Petrop., part 1, p. 95, pl. 4, fig. 7, 1855.

Godman & Salvin, Biol. Cent.-Amer., Rhop., vol. 2, pp.

249, 250; vol. 3, pl. lxxiii, figs. 5, 6, 1893.

Mabilles & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 173, 179, 1908; (this reference cannot apply to *scylla* Menetries).

Draudt, Seitz, Macrolep. of the World, vol. 5, pl. 162 a, 1921; (neither the text nor the figure apply to *scylla* Menetries).

dulcinea Plotz, Stett. Ent. Zeit., vol. xl, p. 532, 1879.

Mabilles and Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 c, 1921.

Godman and Salvin are undoubtedly correct in their determination of *scylla* Menetries and their application of the name is followed in this paper. The wings are greenish-black. Fringes white, sometimes preceded by a narrow white marginal stripe on the secondaries. Head black with white spots and lines. Palpi red, bordered with black internally, which may be reduced to central black spot on the inner edge. The collar seems to vary somewhat, from red bordered with white externally to black intermixed with red and bordered with white externally. Pectus black. Shoulder-covers red. Tegulae varying considerably, they may be black with a red, orange or yellow spot at the base and the upper side edged with red, orange or yellow, or with greenish-white (*dulcinea* Plotz), or they may be entirely dark. The anal tuft red. Thorax above with a greenish-white line on each side. The Biologia figure represents the typical form. *Dulcinea* Plotz might be used for the form with the greenish-white lines of the tegulae but there seems little point in doing so in view of the wide variation in this character and Godman & Salvin are followed here in placing it as a synonym of *scylla*. As noted previously in this paper, the Mabilles and Boulet, and Draudt references to *scylla* seem to apply to the insect we have identified as *papius* Hopffer.

Distribution. Type locality: Nicaragua. Of *dulcinea* Plotz: Panama.

Mexico; Guatemala; Honduras; Nicaragua; Panama; Colombia; Venezuela (G. & S.). Iguala, Mexico; Peru (?), (B).

N. Mexico; Petuc, Honduras; Sta. Catharina, Brazil (?) (A.M.).

P. menecrates (Plate XXXVIII, Fig. 36).

Mabilles, Ann. Soc. Ent. Belg., vol. xxi, p. 13, 1878.

Godman & Salvin, Biol.-Cent. Amer., Rhop., vol. 2, pp. 248, 249, 1893.

Mabilles & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 174, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 837, pl. 162 b, 1921.

Wings on both sides with a bluish-green or greenish sheen. The primaries beneath tinted violaceous on the inner margin. Fringes white. Head, palpi, collar, shoulder-covers and anal tuft, red. Pectus black. Tegulæ black with a red spot at the base. In an individual from Bolivia there is an accumulation of pale brown and whitish scales on both sides of vein 1 toward the base, on the underside of the primaries, and also a few scattered bluish scales below the costal vein in the basal third; the form of the genitalia in this specimen does not essentially differ from that of the other specimens.

Distribution. Type locality: Peru.

Brazil; Bolivia (Mab. & Boull.). Honduras;
Colombia; Venezuela; Peru; south Brazil (G.
& S.).

Villarica, Paraguay; Santa Cruz, Bolivia (B).

b. Pectus red.

P. adonis new species (Plate XXXVIII, Fig. 37).

Primaries and secondaries greenish-black on both sides. Fringes white, of the secondaries crenate. Head, palpi, collar, shoulder-covers, pectus and anal tuft, red. The head has a large black spot in front of, and a black transverse line behind, the antennæ. Tegulæ black, with a few red hairs at the extreme base. Body black, above and beneath. Legs black, with red hairs intermixed on the femora and tibiæ.

Expanse: 58-62 mm.

Type material: Holotype male, Villarica, Paraguay, November, in collection of the author. Paratypes, 1 male, Villarica, Paraguay; 1 male, Santa Catharina, Brazil, in collection of the author; 2 males, Brazil, in collection of the American Museum of Natural History, New York City. The terminal arm of the elaspers differs from that of *scylla in* being produced directly outward and somewhat sinuous instead of being curved, serrate only on the dorsal edge, and bearing at the base an upright, serrate flange. The flanges at the base of the uncus are somewhat elongate, instead of rounded.

P. mariæ new species (Plate XXXVIII, Fig. 38).

Primaries and secondaries on both sides shining greenish-black, the inner margin of the primaries somewhat violaceous beneath. Fringes white, or intermixed with dark scales on the primaries toward the apex. Outer mar-

gin of the secondaries crenate. Head carmine, with a black transverse line in front of the antennæ and another one behind. The palpi are carmine, black at the tip, giving the appearance of a black bar across the front of the head. Collar carmine. Pectus blue-black with a small patch of red hairs at the base, and a few scattered red hairs running part way down the center. Tegulæ black. Anal tuft carmine. Female larger but otherwise the same.

Expanse: male, 54 mm.; female, 68 mm.

Type material. Holotype male, Rio Grande do Sul, Brazil; allotype female, Hansa Humboldt, Santa Catharina, Brazil. Paratypes, 1 male, Rio Grande do Sul, Brazil; 1 male, Masranduba-Blumenau, Brazil, in collection of the author.

This species has much the same general appearance as *adonis*, but is smaller (at least in the males) and differs superficially in the characters mentioned in the description as well as in the form of the claspers in the genitalia, in these the terminal arm is rather short and ends in a double pointed lobe, somewhat like the tail of a fish, and is serrate on the outer edge.

This handsome species is named for Mrs. E. I. Huntington.

- c. With white basal band of primaries and secondaries, beneath.

P. fluminis (Plate XXXVIII, Fig. 39).

Butler, Cist. Ent., vol. 1, p. 176, 1873.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 180, 1908; (as *bixæ* Cramer, not *fluminis* Butler).

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, 1921; (as *bixæ* Cramer, not *fluminis* Butler).

bixæ Cramer (not Linnæus); Pap. Exot., vol. 3, p. 12, pl. 199, figs. C, D, 1780.

tiribazus Plotz, t. 1277; (fide Mabille & Boulet). Description unpublished?

Cramer refers the insect he figured to *bixæ* Linnæus, a name which is now applied to an African *Rhopalocampta*. Butler realizing that the name "*Papilio bixæ*" applied by Cramer to this insect could not hold, as it would be a homonym of the earlier "*Papilio bixæ*" of Linnæus, redescribed it as *fluminis*, and he states in his description that *bixæ* Cramer is a synonym. Cramer

states in his remarks that the specimen figured is a female. The figure shows an insect with apparently entirely white fringes. Capt. Riley, of the British Museum, writes, that Butler's type in the museum collection has entirely white fringes and very well agrees with the Cramer figure of *bixæ* and that it is the only specimen in the collection which does agree in having entirely white fringes. Butler's type of *fluminis* has a broad white basal band on both primaries and secondaries beneath, which is approximately of the same width on both wings.

There are no female specimens before the writer and no specimens with entirely white fringes, a character which is probably variable. The insect to which the name *fluminis* is applied in this paper is bluish or greenish-black, with a red head on which there is a black spot, varying in size, before the antennæ; collar, palpi and anus red; pectus, shoulder-covers and tegulæ blue-black; fringes white, more or less darkened toward the apex of primaries, finely marked with black at the vein ends in the upper part of the primaries and sometimes at the outer and anal angles of the secondaries. Both primaries and secondaries have a white basal band beneath, very broad in specimens from Colombia, French Guiana and Chapada, Brazil, narrower in those from Ecuador which closely agree with the Draudt figure of *intersecta* Herrich-Schaffer (Seitz, Macrolep. of the World, vol. 5, pl. 162 c). The form of the genitalia is the same in the specimens from the various localities. There are two male specimens at hand which are taken to be aberrations of *fluminis*, one of these from Chapada, Brazil, in the collection of the Academy of Sciences, Philadelphia, has no white basal band on the secondaries but in the area usually occupied by the band there are a few widely scattered pale bluish-white scales and on the primaries the band is much broken, consisting of a few white scales above the costal vein, a long streak below it, a spot at the base of the cell and another divided by vein 1. The other specimen from Bogota, Colombia, in the collection of the writer lacks all trace of the white basal band of the secondaries, that of the primaries being represented by only a few bluish scales below the costal vein. The form of the genitalia of these two does not differ from that of the prominently banded individuals.

The insect referred to *fluminis* Butler by both Mabille & Boullet and Draudt appears to be the one described as *draudti* in Group A of this paper.

Distribution. Type locality: "Santarem (Bates); Archidona (B.M.)" (*fluminis* Butler).

Surinam (*bixæ* Cramer).

Colombia, French Guiana, Ecuador, (B).

Chapada, Brazil, (A.S.).

Amazon, (A.M.).

P. *intersecta*.

Herrich-Schaffer, Corresp.-blatt Zool.-Mineral. ver, Regensb. vol. xxiii, p. 166, 1869. (Prodr. Syst. Lep., part 3, p. 58, 1869.)

Plotz, Stett. Ent. Zeit., vol. xl, p. 533, 1879.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 c, 1921.

Herrich-Schaffer's description is too brief to be of real use. He describes *intersecta* in the genus *Myscelus* which he separates from the genus *Pyrrhopyge* by "Saum der Hfl. mehr oder weniger gezacht, auf den R dunkler" and the description reads "O S ganz schwarz, unbezeichnet." Plotz states that both wings beneath are dusted with white toward the base, the fringes of the hindwings sometimes finely speckled with black, and cites "Pl. t. 1275." The characters given by Plotz are more or less followed by Mabille & Boullet and Draudt. As it is stated in the preface of the Seitz, Macrolep. of the World, vol. 5, p. vii, that many of the figures published in that volume were copied from the Plotz drawings, it may be that the figure of *intersecta* on plate 162 c correctly portrays the Herrich-Schaffer species. This figure seems to closely resemble specimens at hand from Ecuador which the writer believes to be *fluminis* Butler with somewhat narrower white basal bands on the underside of the secondaries and not entirely white fringes, as mentioned in the remarks under that species. The Herrich-Schaffer description of *intersecta* antedates that of Butler's *fluminis* but as there

seems to be no positive evidence at hand that the two names refer to the same species, it is probably better that both be retained.

Distribution. Herrich-Schaffer gives no locality for the type. Plotz gives Peru, and Mabilie & Boulet give Colombia and Ecuador.

P. semidentata.

Mabilie, Petit Nouvelles Ent., pp. 161, 162, 1877.

Mabilie, Ann. Soc. Ent. Belg., vol. xxi, p. 14, 1878.

Mabilie & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 180, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, 1921.

There are two specimens before the writer which fairly well agree with the description of *semidentata* and there seems to be nothing to distinguish these from *fluminis* Butler except the progressive darkening of the fringes of the primaries and the more markedly interested fringes of the secondaries. In one specimen the collar is blue-black and in the other it is red. The form of the genitalia does not differ from that given in this paper for *fluminis* Butler.

Distribution. Type locality: E. Peru. Colombia (Mabilie & Boulet). New Granada; Bolivia (Mabilie). Upper Amazons; Matto Grosso (B.M.). Manicore, Brazil; Corumba; Matto Grosso (B).

2. Fringes yellow.

P. carriæ new species (Plate XXXVIII, Fig. 40).

Male. Upperside. Wings greenish-black, with an antemarginal yellow band on the secondaries, broader in the center than at the two ends and almost crossed by the black veins. Beneath. Same color as above, inner margin and base of primaries violaceous brown; secondaries with rather long black hairs at the base and which extend into the discal area, the yellow antemarginal band same as above and carried on the primaries as a very fine line. Fringes yellow on both wings. Head, palpi, collar and abdominal apex red. Shoulder-covers red with the extreme ends at each side black. Tegulæ blue-black with a red spot at the base. Pectus blue-black.

Expanse: 58 mm.

Type material. Holotype male, Sapucay, Paraguay, February (Heinrich), in collection of the Academy of Natural Sciences,

Philadelphia, Penna. Named for Mrs. R. C. Williams, Jr. This species differs from the description of *josephina* Draudt in that the fringes are decidedly yellow (not white tinted with yellow), the antemarginal band of the secondaries is almost crossed by the black veins, the red shoulder covers, and the red spot on the tegulae.

Carriae resembles *pelota* but is larger, the pectus is black instead of red and the form of the genitalia is very different.

GROUP C. *P. hygieia* section

Genitalia. Included in this group are those species having the same form in the male genitalia as that of *hygieia* Felder. The uncus terminates in two separate and pointed arms, somewhat bent downward and with a short, pointed projection between them. There is a short, round flange on each side of the uncus at the base. The scaphium is present. The girdle varies from long to rather short and the saccus also varies in length. The aedoeagus has a bulbous swelling at about one-quarter of its length from the base, from which it tapers toward the apex; before the apex there is a short, pointed flange. The claspers terminate in a rather long, slightly curved arm, serrate on the dorsal edge, the tip upturned and the extreme apex pointed, rounded or blunt. There is occasionally some asymmetry in the terminal arms. At the dorsal base of the arm is an upward projection which is sometimes very long and curved and serrate at the tip (*rufipectus*, *zereda*, *apollo*). *Aesculapus* and *chalybea* differ somewhat in that the arm of the claspers is more curved upward and the apex rounded.

a. Pectus black. Palpi red.

P. hygieia.

Felder, Reise Novar., Lep., vol. 2, p. 506, pl. 70, fig. 1, 1866.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 182, 1908. (as *bogotana* Reakirt, not *hygieia* Felder.)

bogotana Reakirt, Proc. Acad. Nat. Sciences, Phila., p. 90, 1868.

The description states that the wings above are steel-blue, darkened at the external margin, secondaries with the posterior margin orange-red, crenate within. Wings darker beneath, primaries with the inner part fuscous, secondaries with the posterior margin paler and a little broader than above. Fringes fuscous. Palpi red. The figure shows the head, collar, shoulder-covers and tegulæ dark. As the color of the pectus is not mentioned in the description of either *hygieia* or *bogotana* it is assumed that it is not red. The Draudt reference mentioned above seems to refer to *rufipectus* Godman & Salvin and not to *hygieia* Felder.

Distribution. Type locality: "Nova Granada: Bogota"; (*hygieia*).
"Insagasuga, New Granada"; (*bogotana*).

b. Pectus black. Palpi black with the tip red.

P. phoebus.

Rober, Ent. Mitteil, vol. xiv, p. 86, 1925.

The description states that the band of the secondaries is a little shorter and considerably broader toward the anal angle than in *hygieia*. Front legs not red. Palpi with only the distal section red. Collar not red. The brief description indicates that *phoebus* differs from *hygieia* not only in the extent of the marginal band of the secondaries but in that only part of the palpi is red.

Distribution. Type locality: "Kolumbien (Cauca-Tal)."

c. Pectus red. Palpi black.

P. zereda.

Hewitson, Trans. Ent. Soc. London, third series, vol. 2, p. 484, 1866. (not Exot. Butt., vol. iv, Pyrrh. pl. ii, fig. 13, 1871).

Godman & Salvin, Biol. Centr.-Amer., Rhop., vol. 2, pp. 250, 251, 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, p. 182 (not p. 178) 1908.

rufinucha Godman & Salvin, Proc. Zool. Soc., London, pp. 151, 152, 1879; (not *rufipectus* Godman & Salvin, Proc. Zool. Soc., London, p. 152, 1879).

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 162 f, 1921.

Hewitson's description states "Upperside, female, glossy blue; the posterior wing bordered with orange; the neck with a few scarlet hairs." Godman and Salvin say "On an examination of the Hewitson collection we find that the name *P. zereda* was applied to a species allied to *P. hygieia* Feld. which we subsequently described as *P. rufipectus* (P. Z. S. 1879, p. 152)." It is the belief of the writer that the statement of Godman & Salvin that *zereda* is the species which they described as *rufipectus* is an error and that they intended to say *rufinucha* as both species were described in the same paper, *rufinucha* first and *rufipectus* immediately following and on account of their similarity might easily be transposed, this seems all the more probable in view of the fact that Hewitson's description mentions the scarlet hairs on the neck, a characteristic of *rufinucha* but not of *rufipectus*. Hewitson describes only the upper side of *zereda*, but as both *rufinucha* and *rufipectus* have a red pectus, which is mentioned in the description of each, it seems safe to assume that *zereda* also has a red pectus. The specimen before the writer, which is identified as *zereda* has a brilliant blue sheen to the wings, on both sides. The secondaries have a narrow orange marginal band cut short before the outer angle and dentate internally. The fringes of the primaries are black; of the secondaries red as far as the band extends, above that black. Head, palpi, shoulder-covers, tegulae, anus and legs are black or blue-black. Collar and pectus red. The Mabille & Boullet reference, (Ann. des Sciences Nat., Paris, p. 178, 1908), seems to refer to some other species. The Draudt reference, (Seitz, p. 840, pl. 162 f), seems to refer to the female of *P. chalybea* Scudder, although the locality given, "Ecuador," is outside the range of *chalybea* it is probably incorrect.

Distribution. Type locality: Ecuador. Bolivia (*rufinucha*). Peru (?) (B).

The form of the genitalia is very similar to that of *rufipectus*, (Fig. 41).

P. rufipectus (Plate XXXVIII, Fig. 41).

Godman & Salvin, Proc. Zool. Soc., London, p. 152, 1879.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, p. 182, 1908; (as synonym of *zereda* Hewitson).

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, 1921; (as synonym of *zereda* Hewitson).

The color of the wings and fringes is the same as in *zereda*, but the marginal band of the secondaries is much broader and there is no red on the collar. The head, palpi, shoulder-covers, collar, tegulæ and anus are black or blue-black. Pectus red. The action of Mabille & Boulet and Draudt in placing *rufipectus* as a synonym of *zereda* Hewitson, probably follows the Godman & Salvin action in the Biologia, which the writer believes to be incorrect as stated in the remarks under *zereda*. It seems probable that the characters given for *hygieia*, by Mabille & Boulet, (Ann. des Sciences Nat., Paris, p. 177, 1908) as well as their records of specimens (p. 182), refer to *rufipectus*.

Distribution. Type locality: Rio Topo, Ecuador (A.M.) (B.).

P. apollo (Plate XXXVIII, Fig. 42).

Rober, Ent. Mitteil., vol. xiv, p. 86, 1925.

There is a specimen in the collection of the writer, from the Fassl collection, which bears the locality label agreeing with the type locality cited for *apollo*, and which agrees with the characters of maculation given in the description. The wings are the same color as in *zereda* Hewitson (not *chalybea* Seudder) and in *rufipectus* Godman & Salvin. The orange marginal band of the secondaries is narrow, and prolonged to near the outer angle, instead of being cut short before that point. The head, palpi, shoulder-covers, tegulæ and anus are black or blue-black. The pectus and collar are red. The Draudt figure of *rufinucha* Godman & Salvin (Seitz, pl. 162 f) looks very much like *apollo* Rober, the orange fringes being carried still further upward.

The genitalia are similar in form to *zereda* Hewitson and *rufipectus* Godman & Salvin, in the single specimen available for examination the dorsal upward projection at the base of the terminal arm of the claspers is much shorter, whether this is a

constant character cannot be determined until more material is available.

Distribution. Type locality: "Bolivia (Rio Songo, 750 mm., A. H. Fassl)."

d. Pectus black. Palpi black.

P. aesculapus (Plate XXXVIII, Fig. 43).

Staudinger, Verh. Zool. Gesel., Wien, vol. xxv, pp. 112, 113, 1875.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, p. 251, vol. 3, pl. lxxiii, fig. 9, male genit., 1893; (as *aesculapius*).

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 182, 1908; (as *aesculapius*).

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 162 f, 1921; (as *aesculapius*).

variegaticeps Godman & Salvin, Proc. Zool. Soc., London, p. 152, 1879.

Wings with a glistening blue sheen, secondaries somewhat darker on the upper side. Fringes of primaries black, sometimes with a few red scales near the anal angle; of the secondaries red. Head black with white lines. Palpi black. Collar and shoulder-covers black with a few white hairs. Tegulae black with a few white hairs at the extreme base. Godman and Salvin place *variegaticeps* as a synonym of *aesculapus*.

Distribution. Type locality: Chiriqui, Panama. Costa Rica (*variegaticeps*).

San Jose, Costa Rica (B).

P. insana.

Staudinger, Verh. Zool. Gesel., Wien, vol. xxv, p. 113, 1875.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, 1921.

The original description says that the wings are black glazed with steel green or blue. Head, breast and palpi black. The

hindwings with a narrow orange border to beyond the middle. The description does not state the color of the collar but Boulet in his description of *P. fassli* says that *insana* has a red collar.

Distribution. Type locality: Peru.

P. fassli.

Boulet, Bull. Soc. Ent., France, pp. 59, 60, 1910.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, 1921.

The description states that the wings are a brilliant blue with a green reflection, a moderate black border on the primaries, the secondaries with a rather broad red band extending almost to vein 7. The fringe of the primaries is lightly mixed with red-orange. Anterior thighs and palpi black. Differs from *insana* Staudinger in the collar being black and not red as in that species.

Distribution. Type locality: Huancabamba, Peru; Bolivia; Colombia.

P. chalybea (Plate XXXVIII, Fig. 44).

Scudder, Rept., Peabody Acad. of Sciences, (for 1871), p. 67, 1872.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, pp. 250, 251; vol. 3, pl. lxxiii, fig. 12, male genit., 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 840, pl. 162 g, 1921.

zereda Hewitson, Exot. Butt., vol. iv, Pyrrh. pl. ii, fig. 13, 1871; (not Trans. Ent. Soc., London, third series, vol. 2, p. 484, 1866).

The primaries are metallic green and the secondaries metallic blue. Fringes of both wings orange. Secondaries with a marginal orange band, broadest at the anal angle, dentate interiorly. Head, palpi, pectus, collar and tegulæ are dark bluish. The legs have the femora striped with orange.

Hewitson's original description of *zereda* does not apply to *chalybea* and the type locality of *zereda* is given as Ecuador

whereas *chalybea* is a Mexican insect. *Zereda* is apparently a good species but in any event the name having been applied to one insect cannot be shifted to another in the same genus. As mentioned by Godman & Salvin the claspers are not quite symmetrical. The left clasper is represented in fig 44, the right clasper is like the *Biologia* figure.

Distribution. Type locality: Mexico. Guadalajara; Mexico City, Mexico (B).

P. jonas.

Felder, Wien Ent. Mon., vol. iii, p. 328, 1859.

Hopffer, Stett. Ent. Zeit., vol. xxxv, p. 371, 1874.

Plotz, Stett. Ent. Zeit., vol. xl, p. 534, 1879.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, p. 250; vol. 3, pl. lxxiii, figs. 7, 8 male genital., 1893.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 162 e, 1921.

cydonia Druce, Cist. Ent., vol. 1, p. 289, 1874.

The wings are dark blue, head black intermixed with fulvous in front. Palpi and abdominal apex fulvous. Fringes white. Outer margin of the secondaries rounded and dentate.

Jonas is included in this group although it does not agree very well with the other members in the general superficial appearance, and the form of the male genitalia, while differing somewhat, seems to be more closely associated here than in any of the other groups.

Distribution. Type locality: Mexico. Mexico; Guatemala (G. & S.).

Oaxaca, Mexico (*cydonia*).

GROUP D. *P. creon* section

Genitalia. Included in this group are the species which seem to be allied to *creon* Druce in their general superficial characteristics; *creon*, however, is the only species placed in this group, of which material has been available for examination of the genitalia. The uncus of *creon* is peculiar in the somewhat bulbous

termination furnished with a bifid beak-like projection. The girdle is of moderate length, the saccus short. The aedoeagus rather short. The claspers terminate in a long, narrow arm, serrate toward and at the tip, somewhat upward curved and with a little asymmetry. There is a short upward projection, serrate at the tip, near the base of the arm.

P. creon (Plate XXXVIII, Fig. 45).

Druce, Cist. Ent., vol. I, p. 289, 1874.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, p. 251; vol. 3, pl. lxxiii, fig. 10, 11 male genital., 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 162 e, 1921.

cyclops Staudinger, Verh. Zool. Gesel., Wien, vol. xxv, p. 114, 1875.

The wings above are a shining dark blue with a blackish outer border. Beneath much the same, paler on the inner marginal area of the primaries. A red spot on the secondaries near the anal angle, repeated on the under side. Head, collar and palpi are black. Shoulder-covers, tegulæ and pectus are blue-black.

Distribution. Type locality: "Calobre, Veragua." Chiriqui (*cyclops*).

Costa Rica; Panama (G. & S.). Honduras;
Costa Rica; Colombia (Mabille & Boulet).
San Jose, Costa Rica (B).

P. sangaris.

Skinner, Ent. News, vol. xxxii, pp. 236, 237, 1921.

The description states that the upper side of the primaries is a shining green-black; secondaries the same, but somewhat darker and with a blood-red quadrate spot near the anal angle. Beneath the same, the spot of the secondaries somewhat smaller and rounded. Palpi crimson, with the tip black.

Abdomen and legs dark green-black.

Distribution. Type locality: "Hacienda Cincinnati, Sierra San Lorenzo, Magdalena, Colombia."

P. aerata.

Godman & Salvin, Proc. Zool. Soc., London, p. 152, pl. 14, fig. 3, 1879.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 177, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 166 a, 1921.

The description states that the wings on the upper side are bronzy-green, the secondaries darker, with a discocellular and three adjoining rufous spots. Beneath the wings are bronzy-green, the three spots of the secondaries forming a rufous patch in the middle. Body greenish-black, the abdomen with six rufous bands on either side.

Distribution. Type locality: "Pueblo Viejo, Sierra Nevada de Santa Marta."

GROUP E. *P. agenoria* section

Genitalia. This group contains those species in which the form of the genitalia is similar to that of *P. agenoria* Hewitson. The uncus terminates in a long, slender, down-curved tip. The girdle is rather short and the saccus moderate in length. The aedoeagus is very long, the shape differing among the species. The claspers are bifid at the termination, one or both or neither of the two parts may be serrate.

1. Anal angle of secondaries red.

a. Basal area of secondaries beneath not white.

P. agenoria (Plate XXXVIII, Fig. 46).

Hewitson, Ent. Monthly Magazine, vol. 12, p. 251, 1876.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 d, 1921.

In the insect here treated as *agenoria* the color of the wings is a dark brown with a slight sheen, the anal angle of the secondaries red. The fringes are white, darkened in the apical half of the primaries and red at the anal angle of the secondaries. The head is black with a white line just above the palpi,

three white spots in a line in front of the antennæ and a very narrow white line in back of the antennæ. The palpi are blackish-brown. The collar dark brown with a narrow white line. Shoulder-covers red. Tegulæ blackish-brown. Pectus black.

In *agenoria* and the males of the other species in this group, that have been available for examination by the writer, there is a more or less distinct projection on the outer margin of the secondaries, above the anal angle. This projection is lacking in the females.

The figure of the genitalia is from a specimen said to have come from Colombia but the writer is not sure that this is correct, however, the specimen agrees with another individual, in his collection, from Peru.

Distribution. Type locality: Chanchamayo, Peru. Peru; Colombia (?) (B).

P. styx (Plate XXXIX, Fig. 47).

Moschler, Verh. Zool. Gesel., Wien, vol. xxviii, p. 113, 1878.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 166 a, 1921.

anina Plotz, Stett. Ent. Zeit., vol. xl, p. 533, 1879; (as synonym of *styx* Moschler).

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, p. 181, 1908.

There are no specimens before the writer from the type locality (Colombia) but a Bolivian specimen agrees very well with the description and shows the following characters. The wings are greenish-black above and beneath. The secondaries with the anal angle broadly red. Fringes white, blackened toward the apex of the primaries and red at the anal angle of the secondaries. Head, palpi, collar and anal extremity red. Pectus, shoulder-covers and tegulæ blue-black.

Plotz himself places his *anina* as a synonym of *styx* Moschler and apparently published no description but Mabille and Boulet for some reason list *anina* as a separate species.

Distribution. Type locality: Colombia. Chapada, Brazil (A. S.).
Santa Cruz, Bolivia (B).

P. cruor.

Druce, Trans. Ent. Soc., London, part 2, p. 378, pl. xxi, fig. 2, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 166 a, 1921.

The description states that the wings are indigo blue shading to green. Anal angle of hind wing rich red. Fringes white except apex of primaries black and anal angle of secondaries red. The primaries have a broad band of modified scales before the center, which are darker than the ground color and extend from the sub-costal nervure, where it is broadest, to the sub-median nervure where it terminates pointedly. Palpi black. Head black with a long white frontal spot and white spots at the base of the antennæ and between the eyes. Collar dark red. Under-side as above with the transverse fascia of the primaries repeated and widened beyond the end of the cell.

Although the description states that the "collar" is red the figure indicates that this part is that which is referred to in this paper as the "shoulder-covers."

Distribution. Type locality: Pozuzu, Peru.

P. sanies.

Druce, Trans. Ent. Soc., London, part 2, p. 378, pl. xxi, fig. 3, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 164 d, 1921.

The description states that the upper side is rich dark brown, with bluish reflections. Primaries with a semi-hyaline white fascia extending from the sub-costal nervure broadly to the sub-median, where it ends pointedly, and is divided into three spots by the black median nervules. Fringes of primaries white, blackened toward the apex; of the secondaries white, with the anal angle red. Palpi black. Head black with a white frontal spot and white spots between and at the antennæ. Collar red.

Abdomen concolorous with the wings, and with two minute white spots beneath at the base of the anal segment.

As in *cruor* the figure shows that the part termed in this paper as the "shoulder-covers" is red and not the "collar."

Distribution. Type locality: Farinas, La Paz, Bolivia.

b. Basal area of either or both wings beneath, white.

P. *passova* (Plate XXXIX, Fig. 48).

Hewitson, Trans. Ent. Soc., London, third series, vol. 2, p. 482, 1866.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 d, 1921.

The description states that the upper side is green-black. Anal angle of the secondaries scarlet. Beneath the base of both wings is broadly white. Fore head, palpi and anus are scarlet. There are two specimens, a male and a female, from Peru, before the writer, the female has the basal area of both primaries and secondaries white, but the male has a white basal area of the secondaries only, the base of the primaries being entirely black, as in the Draudt figure, all of the other characteristics, however, agree with the description. This male, from which the accompanying figure of the genitalia was made, may be merely a variation from typical *passova*. Unfortunately the genitalia of this specimen was very much malformed, so only one clasper and the ædoeagus could be figured.

Distribution. Type locality: "Amazon (Ega) and Cayenne." Perene, Peru (A. S.). Peru (B).

P. *gortyna*.

Hewitson, Trans. Ent. Soc., London, third series, vol. 2, p. 483, 1866.

Hewitson, Exot. Butt., vol. iv, Pyrrh. pl. iii, fig. 21, 1871.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 175, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 166 a, 1921.

The description states that the wings are black on the upper side; secondaries with a large white spot at the apex and the anal angle scarlet. Beneath, secondaries with the basal half white. Fore head, palpi and anus scarlet.

Distribution. Type locality: "Amazon (Ega)."

2. Anal angle of secondaries not red. Secondaries with a marginal row of metallic spots. Fringes white.

P. gellias.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, p. 248, 1893; vol. 3, pl. cxii, figs. 1, 2, 1906.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 175. 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 d, 1921.

The description states that the wings are dark olive above, the secondaries elongate and with a projection at the end of the first median branch, and with a sub-marginal dark olive fascia divided by the dark veins. Beneath unicolorous dark olive, primaries toward the base and secondaries in the center with dark hairs. Head, palpi, anterior coxæ and abdominal apex fulvous-red.

Distribution. Type locality: Costa Rica. Chiriqui, Panama (G. & S.).

P. gazera.

Hewitson, Trans. Ent. Soc., London, third series, vol. 2, p. 482, 1866.

Hewitson, Exot. Butt., vol. iv, Pyrrh. pl. iii, fig. 20, 1871.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, p. 248, 1893.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 838, pl. 162 d, 1921.

The description states that the wings are black above, the primaries glossed with green at the costal margin; secondaries with a marginal band of glossy blue. Beneath blue-black with black hair near the base of both wings. Fringes white. Head, palpi and anus scarlet.

Distribution. Type locality: "Amazon (St. Paulo)."

P. ganymedes new species (Plate XXXIX, Fig. 49).

Male. Upper side. Primaries black with a slight greenish sheen. Secondaries black with a marginal band of triangular blue-green spots between the veins. The abdominal fold is bordered interiorly with rather long black hairs which also extend over the basal and discal areas of the wing. The secondaries are somewhat elongate and have a distinct projection in the outer margin above the anal angle. Beneath, greenish-black, a little paler at the base and inner margin of the primaries. The secondaries with a white basal band occupying about one-third of the wing; rather even in width but not sharply defined on the outer edge. Fringes white, darkened in the apical area of the primaries. Head red, except the extreme rear which is black. Palpi and anus red. Collar, shoulder-covers pectus, and tegulæ are blue-black. Body and legs blue-black, the hind legs fringed with pale brown.

Expanse: 56 mm.

Type material. Holotype male, Colombia, in collection of the Academy of Natural Sciences, Philadelphia, Penna.

3. Fringes orange. No marginal band of metallic spots on the secondaries.

P. fleximargo (Plate XXXIX, Fig. 50).

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 178, 182, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 841, 1921.

There is a single male specimen from Mapiri, Bolivia, before the writer, which agrees with the description except in the color of the head, which appears to have been attached, so it is not certain that it is the correct one. The wings above are brown with an olive sheen, the veins showing through in darker color; beneath paler and with less sheen. The fringes are orange and preceded by a marginal band of the same color, narrow on the primaries and wider on the secondaries; approximately the same on both sides of the wings. The secondaries have the projection of the outer margin above the anal angle. Pectus black. Shoulder-covers and tegulæ brownish. The description states that the head is red, with the occiput blackish.

Distribution. Type locality: Bolivia.

MISCELLANEOUS

P. bouletti.

Le Cerf, Bull. du Mus. Nat. d'Hist. Naturelle, Paris, p. 162, 1922.

The description states that the wings are shining greenish-black, the primaries with three groups of transverse, dark saffron-yellow hyaline spots: a narrow median band divided into three by the nervules, obliquely from the radial nervule to nervure 1b, curved inward above the cell; a short parallel discal band beginning at nervure 5 to the middle of nervure 3; two apical spots between 6 and 7. Beneath duller, purplish at the base, with the markings less dark than above, except the spot in the cell. Fringes black. Head and palpi red-brown, with a transverse line before the vertex, at the sides in front, and the third segment of the palpi black. Antennæ, body and legs are greenish-black. Last sternite bordered with red. Anal extremity missing but red hairs remaining indicate that it is more or less of this color. The writer is unfamiliar with this species and is unable to place it in any of the foregoing groups; from the superficial characters given in the description it may be more closely affiliated with some other genus in the *Pyrrhopyginae*.

Distribution. Type locality: "Near Pampelona, Colombia."

P. galgala.

Hewitson, Trans. Ent. Soc., London, third series, vol. 2, p. 483, 1866.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, pp. 253, 256, 257, 1893.

Godman & Salvin refer *galgala* to the genus *Mysoria*, although they note that the venation does not quite agree with it. The form the male genitalia differs from that of the various groups of *Pyrrhopyge* dealt with in this paper. The writer follows Godman & Salvin in considering *galgala* to be better placed in the genus *Mysoria*.

P. fimbriata.

Plotz, Stett. Ent. Zeit., vol. xliii, p. 322, 1882.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, p. 636, 1901.

Godman, Ann. and Mag. Nat. History, series 7, vol. xx, p. 138, 1907.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, p. 178, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, pp. 840, 975, 1003, 1921-1924.

It seems extremely doubtful that *fimbriata* belongs anywhere in the *Pyrrhopyginae*. Plotz was certainly a keen enough student of *Hesperiidæ* to have placed *fimbriata* in the *Pyrrhopyginae* if it belonged there, instead of in *Hesperia* as he did. Godman and Salvin place it among the unidentified Plotz species. Godman, in his notes on the Plotz species says "Unknown to me," and it is more than likely that if he thought it to be a *Pyrrhopyge*, he would have said so. Draudt includes it in the genus *Pyrrhopyge*, probably because Mabille & Boulet did so, and again, questionably, in the genus *Megistias*; and in the "List of American Hesperidæ," (p. 1003), gives for the *Megistias* reference "Exot. Schmett. 20, Hesperid, Tab. 301." and for the *Pyrrhopyge* reference "Stett. Ent. Ztg. 43, p. 321." Plotz, in the Stett. Ent. Zeit. reference describes *fimbriata* as a *Hesperia* and quotes "Pl. Hesp. t. 301." The two Draudt references therefore are the same thing. The expanse given by Plotz for *fimbriata*, "17 mm." would indicate a very small species for a *Pyrrhopyge* which are quite large and robust insects. While there is no apparent certainty that *fimbriata* belongs in the genus *Megistias*, it is probably much nearer to its true affiliation there than in the genus *Pyrrhopyge*.

Distribution. Type locality: Mexico.

APYRROTHRIX

Lindsey, Univ. of Iowa Studies, vol. ix, no. 4, pp.

15, 16, 1921.

Lindsey erected this genus, with *Erycides araxes* Hewitson as the type, separating it from *Pyrrhopyge* Hubner by the different habitus and shape of the secondaries.

Genitalia. The species included with *araxes* in this paper are so placed from their general superficial appearance and the sim-

ilarity in form of the genitalia. The uncus terminates in two slightly curved and pointed arms between which there is a central projection (*araxes*) or forked with a roundish, somewhat pointed flange at the base on each side (*Maculosa, erythrosticta, cossea*). The scaphium is well developed. The girdle is rather variable in length. The aedoeagus somewhat stout, and varying in shape. The arms of the claspers are from moderate to rather long, more or less curved upward, pointed and with numerous serrations on the dorsal edge (in *maculosa* with less on the dorsal edge, and a few on the ventral edge toward the tip), and with one or two stout upward projections at the base, which are usually serrate at the tip.

A. *araxes* (Plate XXXIX, Fig. 51).

Hewitson, Deser. of 100 New Species of Hesp., part 1, p. 2, 1867.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, pp. 252, 253; vol. 3, pl. lxxiii, figs. 14, 15, 16 male genital., 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 162 e, 1921.

cyrillus Plotz, Stett. Ent. Zeit., vol. xl, p. 529, 1879.

Wings above brown. Primaries with a median row of three spots: a small one on the lower side of vein 2 about the center, a larger one notched on the outer edge, between veins 2 and 3, a somewhat similar one across the cell; three small, irregular spots outside of these half way to the margin, between veins 3-4, 4-5, 5-6; four subapical spots; all of the spots are white-hyaline. Beneath, brown, paler than above, fulvous in the basal area and along the coastal margin of the primaries, spots of the upper side repeated; the secondaries with a little more than the basal two-thirds fulvous, crossed by a narrow line of the ground color toward the base and a wide irregular line of similar color near the outer edge, marginal area of the wing broadly brown.

Thorax brown above, fulvous beneath; abdomen brown, the segments edged with fulvous. Head brown and fulvous intermixed. Palpi, collar and pectus fulvous.

Shoulder-covers brown mixed with fulvous. Tegulæ and anus brown. Fringes white, darkened at the apex of the primaries and intersected with brown at the vein ends.

Distribution. Type locality: Mexico. Oaxaca (*cyrillus*). Honduras (B).

A. araxes race arizonæ.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, p. 253, 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Skinner, Trans. Amer. Ent. Soc., vol. xxxvii, no. 3, pp. 201, 202, pl. x, 1911.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, 1921.

Skinner & Williams, Trans. Amer. Ent. Soc., vol. xlviii, p. 111, p. 110, fig. 1, genitalia, 1922.

Arizonæ is a northern race differing from typical *araxes* principally in that the fulvous area of the secondaries beneath is diffused and not sharply defined on its outer border and is sometimes of greater extent so that the marginal brown band is narrower. The genitalia agree with typical *araxes*.

Distribution. Type locality: "Neighborhood of Fort Grant," Paradise, Arizona, May to Sept.; Marfa, Texas (B).
Huachuca Mts., July; Baboquivari Mts., July;
Cochise County, July, August; Prescott, August; all Arizona (A.M.)

A. maculosa (Plate XXXIX, Fig. 52).

Hewitson, Trans. Ent. Soc., London, third series, vol. 2, p. 485, 1866.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, p. 252, 1893.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 162 e, 1921.

agathon Felder, Reise Novar., Lep., vol. 2, p. 506, pl. 70, figs. 2, 3, 1866.

Wings black above, primaries with nine to eleven white-hyaline spots: an oblique row of three, one in the cell, one between veins 2 and 3, a smaller one just under vein 2; one outside of these between veins 3 and 4; another toward the margin between veins 4 and 5; a smaller one obliquely above this between veins 5 and 6 (sometimes absent); four sub-apical, and sometimes another very minute one just below vein 6. Beneath the wings are black, the primaries with the spots of the upper side repeated and a basal orange area; approximately the basal half of the secondaries is orange. Fringes of the primaries black with a little white at the base between veins 1 and 3; of the secondaries white intersected with black at the vein ends. Body black above, beneath orange and black. Head black with several white dots. Palpi black with a large white spot in front and a small one below it. A large white spot on each side below the eyes. Pectus orange interiorly bordered with black. Collar black with a small white dot one each side. Shoulder-covers black. Tegulae black with a minute orange dot near the base. Anal extremity black. Legs blackish-brown haired with orange.

Distribution. Type locality: "Bogota." Nova Granada: Bogota (*agathon*).
Colombia (B).

A. *erythrosticta* (Plate XXXIX, Fig. 53).

Godman & Salvin, Proc. Zool. Soc., London, p. 153, 1879.

Godman & Salvin, Biol. Centr.-Amer., Rhopal., vol. 2, p. 252; vol. 3, pl. lxxiii, fig. 13 genitalia, 1893.

Mabille & Boullet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, pl. 162 e, 1921.

This species is superficially very much like *maculosa* Hewitson. It differs in being slightly paler in ground color, the orange basal area of the secondaries broader, so that the dark border of the wings is narrower; in having a red spot on the upper side of the primaries (sometimes absent) toward the base of the interspace

between veins 1 and 2. All of the specimens at hand have nine white hyaline spots on the primaries except one, which has nine on one wing and ten on the other; these spots are placed the same as in *maculosa*. There is a specimen at hand from Ft. Sherman, Canal Zone, Panama, without the orange spot of the primaries which does not differ essentially in the form of the genitalia from another specimen from Chiriqui, Panama, which has the orange spot. The Ft. Sherman specimen does differ from typical *maculosa* in having the wider orange basal area of the secondaries beneath. There is some asymmetry in the claspers of the specimen from which the accompanying figure was made, the left clasper lacking the angular projection just behind the apex on the dorsal side. In another individual both claspers terminate in a very sharp point. None of those examined exactly agree with the "Biologia" figure in having the lateral plate or flange extended beyond the dorsal margin or in having the stout projection of the dorsal side extended so far upward, but as there seems to be more or less variation among individuals, in the degree in which these parts are produced, this cannot be considered of any specific significance. The species is very closely related to *maculosa*.

Distribution. Type locality: "Chontales, Nicaragua; Veragua."

Guatemala; Nicaragua; Panama (G. & S.).
Truxillo Dist., Honduras; Ft. Sherman, Barro Colorado Island, Canal Zone, Panama (A.M.).
Chiriqui, Panama (B).

A. cossea (Plate XXXIX, Fig. 54).

Druce, Cist. Ent., vol. I, p. 362, 1875.

Mabille & Boulet, Ann. des Sciences Nat., Paris, 9th series, pp. 176, 181, 1908.

Draudt, Seitz, Macrolep. of the World, vol. 5, p. 839, 1921.

Somewhat similar in appearance to *maculosa* Hewitson but differs on the upper side of the secondaries in having a broad, curved, orange band in the center of the wing from the coastal vein to the abdominal fold; and on the under side in having the

orange basal area of the primaries reduced, that of the secondaries wider as in *erythrosticta* and somewhat darker in color and crossed near the base by a narrow band of spots of the ground color. In the specimen at hand there are nine white-hyaline spots on the primaries. There is some asymmetry in the clasps, the figure here given is that of the right clasper.

Distribution. Type locality: Colombia. Colombia (B).

PLATE XXXIV

Figure A

- c collar.
- h head.
- s shoulder-covers.
- t tegula.

Figure B

- a aedoeagus.
- c clasper.
- f flange.
- g girdle.
- sa saccus.
- sc scaphium.
- u uncus.

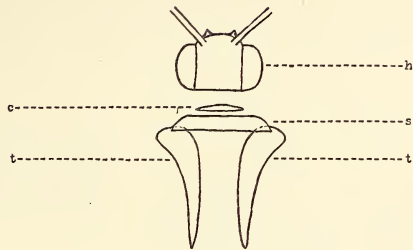


Fig. A.

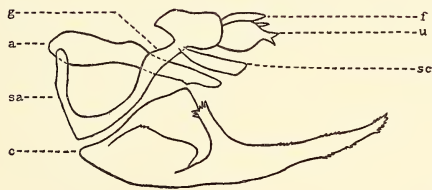
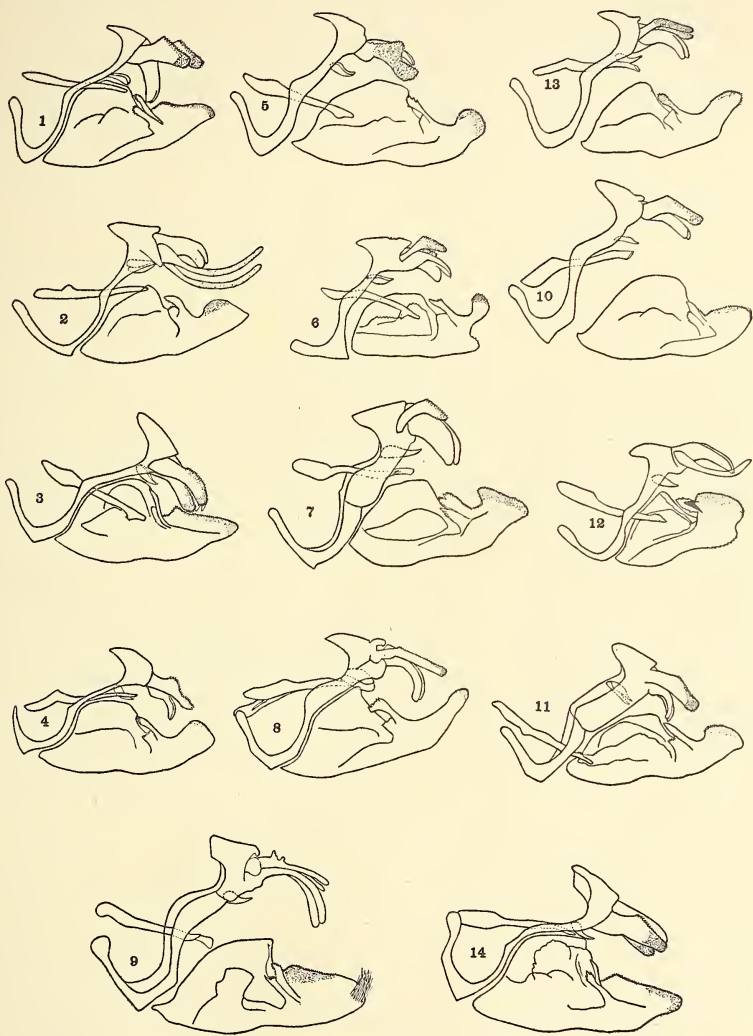


Fig. B.

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PLATE XXXV

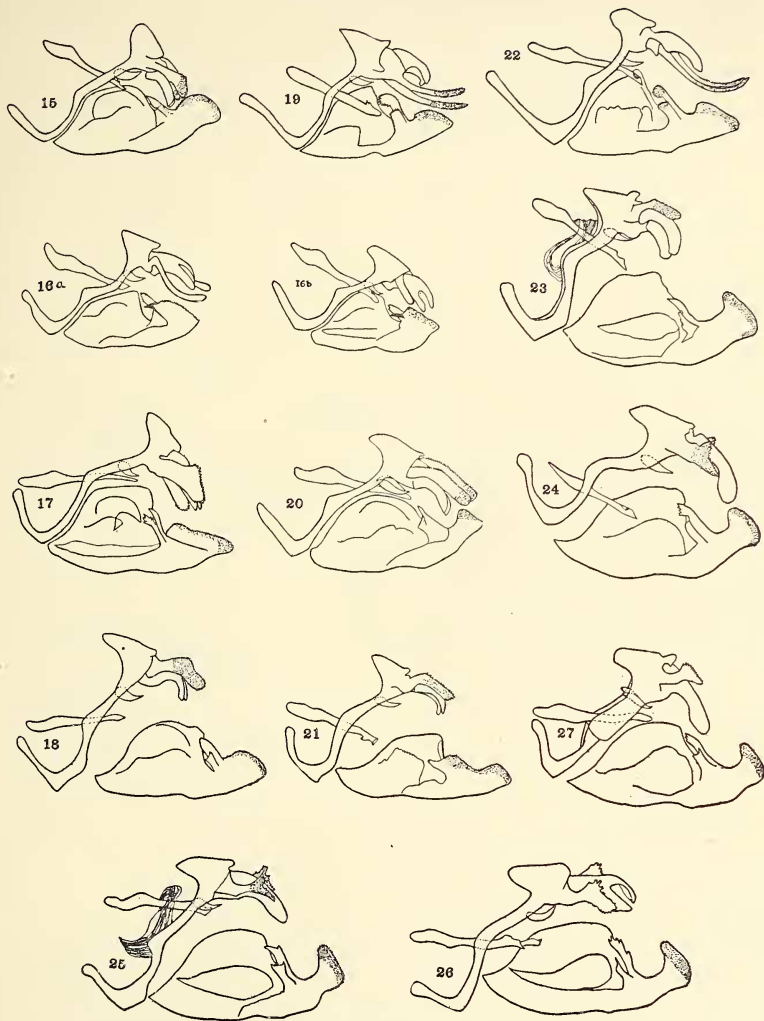
- Figure 1. *Pyrrhopyge hyperici* Hubner.
Figure 2. *Pyrrhopyge sergius* Hopffer.
Figure 3. *Pyrrhopyge leucoloma* Erschoff.
Figure 4. *Pyrrhopyge arachyrea* Hewitson.
Figure 5. *Pyrrhopyge aziza* Hewitson.
Figure 6. *Pyrrhopyge papius* Hopffer.
Figure 7. *Pyrrhopyge decipiens* Mabilie.
Figure 8. *Pyrrhopyge tarapotoensis* new species.
Figure 9. *Pyrrhopyge charybdis* Hewitson.
Figure 10. *Pyrrhopyge zenodorus* Godman & Salvin.
Figure 11. *Pyrrhopyge attis* new species.
Figure 12. *Pyrrhopyge rileyi* new species.
Figure 13. *Pyrrhopyge amythaon* new species.
Figure 14. *Pyrrhopyge williamsi* new species.



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PLATE XXXVI

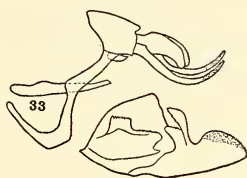
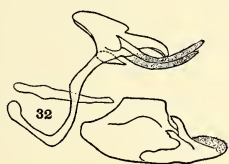
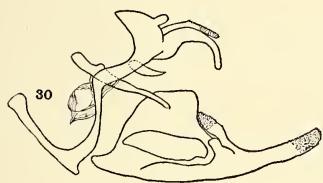
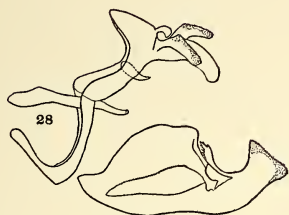
- Figure 15. *Pyrrhopyge phidias* Linnaeus.
Figure 16a. *Pyrrhopyge pseudophidias* new species.
Figure 16b. *Pyrrhopyge pseudophidias* Bell (variation).
Figure 17. *Pyrrhopyge latifasciata* Butler.
Figure 18. *Pyrrhopyge infantilis* Druce.
Figure 19. *Pyrrhopyge andronicus* new species.
Figure 20. *Pyrrhopyge draudti* new species.
Figure 21. *Pyrrhopyge pelota* Plotz.
Figure 22. *Pyrrhopyge mina* new species.
Figure 23. *Pyrrhopyge martena* Hewitson.
Figure 24. *Pyrrhopyge croceimargo* Mabilie & Boulet.
Figure 25. *Pyrrhopyge croceimargo* Mabilie & Boulet (variation).
Figure 26. *Pyrrhopyge schausi* new species.
Figure 27. *Pyrrhopyge pheaz* Hopffer.



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PLATE XXXVII

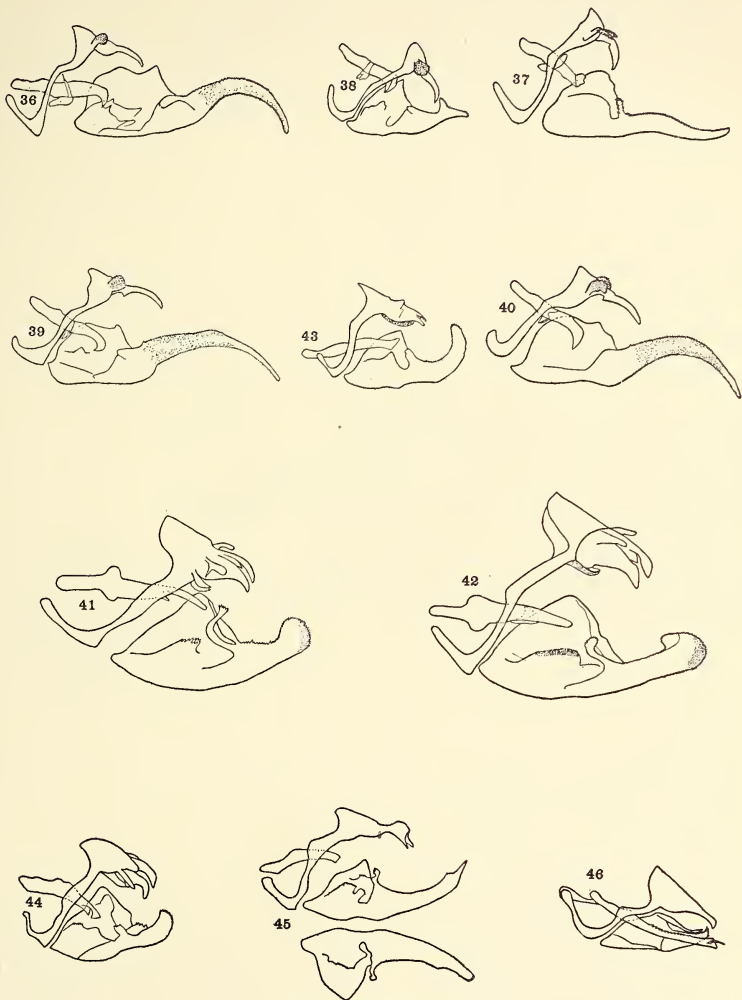
- Figure 28. *Pyrrhopyge olivacea* Rober.
Figure 29. *Pyrrhopyge rubricor* Mabilie & Boulet.
Figure 30. *Pyrrhopyge hadassa* Hewitson.
Figure 31. *Pyrrhopyge hades* Mabilie.
Figure 32. *Pyrrhopyge amyclas* Cramer.
Figure 33. *Pyrrhopyge phylleia* Hewitson.
Figure 34. *Pyrrhopyge kelita* Hewitson.
Figure 35. *Pyrrhopyge scylla* Menetries.



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PLATE XXXVIII

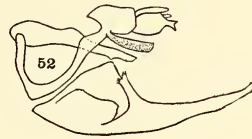
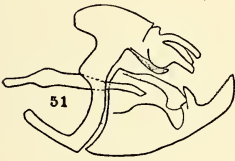
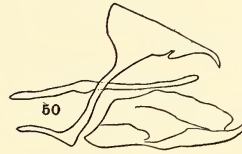
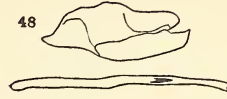
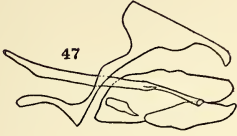
- Figure 36. *Pyrrhopyge menecrates* Mabilie.
Figure 37. *Pyrrhopyge adonis* new species.
Figure 38. *Pyrrhopyge mariae* new species.
Figure 39. *Pyrrhopyge fluminis* Butler.
Figure 40. *Pyrrhopyge carriae* new species.
Figure 41. *Pyrrhopyge rufipectus* Godman & Salvin.
Figure 42. *Pyrrhopyge apollo* Rober.
Figure 43. *Pyrrhopyge aesculapus* Stauginger.
Figure 44. *Pyrrhopyge chalybea* Scudder.
Figure 45. *pyrrhopyge creon* Druce.
Figure 46. *Pyrrhopyge agenoria* Hewitson.



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PLATE XXXIX

- Figure 47. *Pyrrhopyge styx* Moschler.
Figure 48. *Pyrrhopyge passova* Hewitson.
Figure 49. *Pyrrhopyge ganymedes* new species.
Figure 50. *Pyrrhopyge fleximargo* Mabille & Boulet.
Figure 51. *Apyrrothrix araxes* Hewitson.
Figure 52. *Apyrrothrix maculosa* Hewitson.
Figure 53. *Apyrrothrix erythrosticta* Godman & Salvin.
Figure 54. *Apyrrothrix cossea* Druce.



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